FINAL REPORT

California Public Utilities Commission

Energy Efficiency
2006-2007 Verification Report

Prepared by Energy Division

February 5, 2009

Acknowledgments

We wish to acknowledge the effort put into completing this report by the CPUC Energy Division staff and all of the consultants and contractors who performed the detailed work and provided valuable insights.

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1. Executive Summary

1.1. Background

In Decisions 07-09-043 and 08-01-042,[1] the California Public Utilities Commission (CPUC or Commission) adopted a Risk/Reward Incentive Mechanism (RRIM) to encourage the utilities to invest in energy efficiency. The mechanism enables the investor owned utilities[2] to earn rewards on energy efficiency programs in amounts comparable to what the companies would otherwise earn through supply side investments. The Decisions establish a performance standard for the utilities, under which the utilities earn incentives if their energy efficiency program portfolios achieve certain quantitative energy efficiency savings goals.

Under the process adopted in Decisions 07-09-043 and 08-01-042, Energy Division is required to verify the costs and installations of the energy efficiency program activities, update the ex-ante parameters used to estimate program savings and benefits, and publish reports that calculate the earnings the utilities are eligible to claim. There are two interim earnings claims during the 2006-2008 three-year program cycle that are "progress payments" towards total expected earnings, and one final "true-up" payment after the program cycle is completed. This Verification Report applies to the first interim incentives claim for the 2006-2008 program period, and covers program years 2006-2007.

The RRIM earnings accrue if the utility meets or exceeds the Minimum Performance Standard (MPS), a threshold of 85% of the Commission's savings goals (80% for SoCalGas). If the utility achieves 100% of the goals, the earnings rate increases as a reward for superior performance. The 85% and 100% threshold earnings rates, set at 9% and 12% respectively, are used to calculate a share of the Performance Earnings Basis (PEB),which determines the amount of shareholder incentives that the utility will be eligible to collect from electric distribution or gas transportation rates. The PEB is an estimate of the benefits created by the utility portfolio minus the costs of the utility portfolio, measured in monetary terms.

The key threshold requirements for the 2006-2007 interim earnings claim from Decisions 07-09-043 and 08-01-042 are:

- If the metric average is equal to or greater than 65% and below 85% of goal (80% for SoCalGas), and each individual metric is equal to or greater than 65% of goal, then there are no earnings and no penalties.

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[1] Available at http://docs.cpuc.ca.gov/word+pdf/FINAL+DECISION/73172.PDF and http://docs.cpuc.ca.gov/word+pdf/FINAL+DECISION/78370.pdf

[2] "Utilities" or "IOUs" refer to Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas and Electric Company (SDG&E), and Southern California Gas Company (SoCalGas).

- If the metric average is equal to or greater than 85% (80% for SoCalGas) and below 100% of goal, and each individual metric is equal to or greater than 80% of goal, then the IOU can claim 9% of PEB in earnings.
- If the metric average is equal to or greater than 100% of goal and each individual metric is equal to or greater than 95% of goal, then the IOU can claim 12% of PEB in earnings.
- If any individual metric falls to or below 65% of goal, then penalties will be applied.

Table ES1 below sets forth the incentive amounts for which each utility is eligible in this first interim period. Tables ES2a to ES2c provide the kWh, kW and therm savings calculated for each utility. These energy savings impacts were calculated with and without interactive effects.[3] Table ES2a includes only positive interactive effects in calculating savings; Table ES2b includes both positive and negative interactive effects in the calculation of savings; Table ES2c does not include any interactive effects.

The total accomplished kWh, kW, and Therm savings included in the MPS calculation are the sum of the following quantities:

- The 2006 and 2007 EE portfolio *verified* kWh, kW, and Therm savings accomplishments.
- 50% of the 2006 and 2007 *verified* savings attributed to pre-2006 Codes and Standards advocacy work.
- The 2004 and 2005 EE portfolio *evaluation adjusted* kWh, kW, and Therm savings accomplishments.
- The 2004 through 2007 LIEE program *evaluation adjusted* GWh, MW and MTherms savings accomplishments.

The PEB is a representation of net program benefitsthat is calculated by combining two-thirds of the Total Resource Cost (TRC) net benefits and one-third of the Program Administrator Cost (PAC) net benefits. The TRC and PAC are cost-benefit analysis methodologies commonly used for evaluating utility sector Demand-Side Management programs. The TRC and PAC costs include program administrative costs. The TRC additionally includes the costs incurred by program participants. The TRC and PAC benefits include estimates of supply-side costs avoided by the implementation of energy efficiency programs.

The TRC and PAC net benefits are calculated as described in the Standard Practice Manual,[4] and as clarified in D.06-06-063[5] issued in Rulemaking 04-04-025, the 12/21/2006 ALJ Ruling[6] issued in R.06-04-010, and modified for a "free-rider-adjustment" in D.07-09-043 issued in R.06-04-010. The TRC and PAC tests, and their application to the PEB calculation, are described in the Energy Efficiency Policy Manual,

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[3] See Section 6.5.8 for a description of the interactive effects issue.
[4] Available at http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Efficiency/EM+and+V/
[5] http://docs.cpuc.ca.gov/PUBLISHED/FINAL+DECISION/57756.htm
[6] http://docs.cpuc.ca.gov/EFILE/RULINGS/63120.htm

Version 4.0.[7] In summary, the TRC and PAC tests convert electric and gas energy and electric demand savings to monetized avoided cost benefits, and produce (using program administrative costs and program participant costs) benefit/cost ratios and monetized net benefit values. The TRC and PAC tests are calculated in a customized Excel spreadsheet known as the "E3 Calculator."

The components included in the PEB and MPS calculations are described in Section 4 of the Report. The data used to calculate the MPS and PEB for the 2006-2007 Interim Verification Report are discussed in Section 5.

The methodology for calculating 2006-2007 savings and benefits is set out in Section 6 of the Report. The CPUC Energy Division (ED) developed the "Verification Report Template," which is a Microsoft (MS) Access application used to compile IOU savings and cost claims and program tracking data. The VRT supports automated E3 Calculator runs and can summarize savings and net benefits across all runs, by IOU, and place these results in the RRIM calculator developed by ED, included as part of Appendix G. Generation of adjusted energy savings and PEB values using the VRT is discussed in Section 6 of the Report. The VRT User's Manual is provided in Appendix F and the full VRT and associated files are provided in Appendix G. The VRT was developed to allow Energy Division to calculate the MPS and PEB in an efficient, transparent, and repeatable manner.

Energy Division developed a spreadsheet tool, the RRIM Calculator, to calculate the earnings or penalties for each utility, once the GWh, MW, and MMTh accomplishments have been assembled and TRC & PAC net benefits have been calculated with the E3 Calculator engine. The RRIM Calculator is designed to calculate and track the 2006-2007 and 2008 interim incentives as well as the final three year cycle true-up. Section 7 of the Report provides a walk-through for the RRIM Calculator.

1.2. Process for Finalizing this Report

Energy Division issued a draft 2006-2007 Verification Report on November 18, 2008, for stakeholder comments per the schedule set forth in the 10/20/2008 ALJ Ruling[8] in R.06-04-010. Written comments were submitted to Energy Division on December 15, 2008, and uploaded to www.energydataweb.com/cpuc under the topic area entitled "Verification Report for 2006-2007."

Attachment 7 of Decision 07-09-043 requires Energy Division to hold a conference where stakeholders may raise questions about this report, receive responses, and point out any errors they believe are contained in the report. This conference took place on

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[7] http://docs.cpuc.ca.gov/EFILE/RULINGS/80684.htm
[8] Available at http://docs.cpuc.ca.gov/EFILE/RULINGS/92484.htm

December 5 from 10:00 AM to 5:00 PM in the CPUC Auditorium at 505 Van Ness Avenue, San Francisco.

In Decision 08-12-059, the Commission directed Energy Division to submit the final version of this report via resolution on January 15, 2009. Energy Division was granted a three-week extension from January 15th to submit this final report, which incorporates several changes to the calculation of the utilities' interim earnings for 2006-2007 in response to parties' comments on the draft report. Some of these changes include:

- To address the issue of interactive effects, Energy Division's Final Verification Report presents three different sets of results: Without Interactive Effects, With Both Positive and Negative Interactive Effects, and With Positive Interactive Effects Only.
- Residential/non-residential split of 95/5 was applied to SDGE 3016.
- Use of the utilities' filed net savings in their annual reports, where disaggregated data are available, in estimating savings from 2004-2005 programs.

Other specific changes and corrections made to the final report are presented in Section 8 of this report.

Results of the calculations of the MPS and PEB with all the changes that Energy Division made are shown in the tables below, with the following highlights:

- All three calculations addressing interactive effects resulted in PG&E, SCE, and SDG&E all falling within the deadband; hence, not eligible for interim earnings.
- SCE moved to the deadband from the penalty zone as Energy Division calculated in the draft verification report
- SoCalGas' potential earnings declined to +2.9 million from +3.7 million in the draft verification report.

1.3. Allowable Earnings by IOU

Table ES1: Allowable Earnings

	PG&E	SCE	SDG&E	SoCalGas
Total Earnings	-	-	-	$ 2,886,293

1.4. GWh, MW, MMTherm Impacts by IOU

Table ES2a: GWh, MW, MMTherm Impacts with Positive Interactive Effects Only

	First Earnings Claim (PY2006-2007)				
	PG&E	SCE	SDGE	SoCalGas	Total
Savings Goals					
Total Cumulative Savings (GWH)	3,260.0	3,621.0	1,102.4		**7,983.40**
Total Peak Savings (MW)	708.0	760.0	209.5		**1,677.50**
Total Cumulative Natural Gas Savings (MMTh)	47.0		9.5	53.3	**109.80**
Total Savings					
Total Cumulative Savings (GWH)	2,484	3,199	752		**6,435**
Total Peak Savings (MW)	510	594	153		**1,256**
Total Cumulative Natural Gas Savings (MMTh)	47		9	44	**100**
MPS Individual Metric Performance					
Percent of Goal (GWH)	76%	88%	68%		**81%**
Percent of Goal (MW)	72%	78%	73%		**75%**
Percent of Goal (MMTh)	100%		94%	82%	**91%**
MPS Average Metric Performance	**83%**	**83%**	**78%**	**82%**	**82%**

Table ES2b: GWh, MW, MMTherm Impacts with Positive & Negative Interactive Effects

	First Earnings Claim (PY2006-2007)				
	PG&E	SCE	SDGE	SoCalGas	Total
Savings Goals					
Total Cumulative Savings (GWH)	3,260.0	3,621.0	1,102.4		**7,983.40**
Total Peak Savings (MW)	708.0	760.0	209.5		**1,677.50**
Total Cumulative Natural Gas Savings (MMTh)	47.0		9.5	53.3	**109.80**
Total Savings					
Total Cumulative Savings (GWH)	2,484	3,199	752		**6,435**
Total Peak Savings (MW)	510	594	153		**1,256**
Total Cumulative Natural Gas Savings (MMTh)	35		7	44	**86**
MPS Individual Metric Performance					
Percent of Goal (GWH)	76%	88%	68%		**81%**
Percent of Goal (MW)	72%	78%	73%		**75%**
Percent of Goal (MMTh)	74%		75%	82%	**78%**
MPS Average Metric Performance	**74%**	**83%**	**72%**	**82%**	**78%**

Table ES2c: GWh, MW, MMTherm Impacts Without Interactive Effects

	First Earnings Claim (PY2006-2007)				
	PG&E	SCE	SDGE	SoCalGas	Total
Savings Goals					
Total Cumulative Savings (GWH)	3,260.0	3,621.0	1,102.4		**7,983.40**
Total Peak Savings (MW)	708.0	760.0	209.5		**1,677.50**
Total Cumulative Natural Gas Savings (MMTh)	47.0		9.5	53.3	**109.80**
Total Savings					
Total Cumulative Savings (GWH)	2,430	3,086	750		**6,266**
Total Peak Savings (MW)	472	548	147		**1,166**
Total Cumulative Natural Gas Savings (MMTh)	47		9	44	**100**
MPS Individual Metric Performance					
Percent of Goal (GWH)	75%	85%	68%		**78%**
Percent of Goal (MW)	67%	72%	70%		**70%**
Percent of Goal (MMTh)	100%		96%	82%	**91%**
MPS Average Metric Performance	**80%**	**79%**	**78%**	**82%**	**80%**

2. Introduction

In Decisions 07-09-043 and 08-01-042,[9] the California Public Utilities Commission (CPUC or Commission) adopted a Risk/Reward Incentive Mechanism (RRIM) to encourage the utilities to invest in energy efficiency. The mechanism enables the investor owned utilities[10] to earn rewards on energy efficiency programs in amounts which will approach supply-side earnings at a level of superior performance that is significantly greater than the forecasted level of savings or net benefits expected from the authorized energy efficiency portfolio. The Decisions establish a performance standard for the utilities, under which the utilities earn incentives if their energy efficiency program portfolios achieve certain quantitative energy efficiency savings goals.

Decision 07-09-043 establishes the earnings claim and recovery process. There are two interim earnings claims during the 2006-2008 three-year program cycle that are "progress payments" towards total expected earnings, and one final "true-up" payment after the program cycle is completed. Under the process adopted in Decisions 07-09-043 and 08-01-042, Energy Division is required to verify the costs and installations of the energy efficiency program activities, update the ex-ante parameters used to estimate program savings and benefits, and publish a report which calculates earnings the utilities are eligible to claim. This Verification Report applies to the first interim incentives claim for the 2006-2008 program period, and covers program years 2006-2007.

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[9] Available at http://docs.cpuc.ca.gov/word+pdf/FINAL+DECISION/73172.PDF and http://docs.cpuc.ca.gov/word+pdf/FINAL+DECISION/78370.pdf

[10] "Utilities" or "IOUs" refer to Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas and Electric Company (SDG&E), and Southern California Gas Company (SoCalGas).

3. Policy and Procedural Background

3.1. Summary of the RRIM

This section provides an overview of the Risk/Reward Incentive Mechanism adopted by the Commission. It is intended to give the reader familiarity with the procedural background leading up to this verification report. Greater detail can be found in Decisions 07-09-043 and 08-01-042.

3.1.1. Summary of RRIM phase of EE proceeding

In Decision 04-09-060,[11] the Commission adopted numerical electricity and natural gas energy efficiency savings goals to be achieved by the utilities through the year 2013. These goals were adopted as part of the Commission's effort to achieve the objectives of the 2003 Energy Action Plan (EAP).[12] By the time the EAP was updated in October 2005,[13] the utilities had been formally established as the energy efficiency program administrators, and the California energy policy agencies had identified the adoption of a verifiable performance-based incentive mechanism that balances utility shareholder and ratepayer risk as a key action for obtaining all cost-effective energy efficiency. In September 2007, the Commission adopted a risk/reward incentive mechanism (RRIM) based on avoided cost net benefits.

A central element of the RRIM is annual verification of program accomplishments, which is accompanied by measurement of actual energy savings and demand reduction that is to be completed by the Commission's Energy Division at the end of the program cycle. Decision 08-01-042 eliminated the requirement for the utilities to pay back interim earnings if, in the final evaluation, their accomplishments fall between 65% and 85% of the Commission adopted savings goals. D. 08-01-042 also required Energy Division to use parameter estimates from the 2008 update of the Database for Energy Efficient Resources (DEER)[14] when reporting accomplishments and calculating the utilities performance for this report. The ordering paragraph establishing this requirement is provided below in its entirety.

> ***Ordering Paragraph 3 of D.08-01-042***
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> 3. For the 2006-2008 program cycle, the following *ex ante* assumptions of energy savings and demand reductions shall be used in conjunction with verified installations and verified costs to calculate the 1st and 2nd Claims:

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[11] Available at http://docs.cpuc.ca.gov/word+pdf/FINAL+DECISION/40212.pdf.
[12] http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Action+Plan/
[13] Energy Action Plan II, adopted by the PUC in October 2005 in collaboration with the California Energy Commission, refined and strengthened the foundation prepared by EAP I and identified further actions necessary to meet California's energy needs. EAP II continues the strong support for the loading order articulated in EAP I. The loading order describes the priority sequence for actions to address increasing energy needs and identifies energy efficiency and demand response as the State's preferred means of meeting those needs. Energy Action Plan II is available at www.cpuc.ca.gov/PUBLISHED/REPORT/51604.htm.
[14] DEER is available at http://www.deeresources.com/

a) Except as otherwise provided for below, the *ex ante* measure savings parameters that are contained in the utilities' E3 calculators, as of the 4th quarter 2007 report for the 1st Claim and as of the 4th quarter 2008 report for the 2nd Claim.

b) For measures contained in the Database for Energy Efficient Resources (DEER), the 2008 and 2009 DEER updates of *ex ante* measure savings parameters, including net-to-gross ratios and expected useful lives. The 2008 DEER update shall apply to the 1st Claim and the 2009 DEER update shall apply to the 2nd Claim.

c) For customized measures or customized projects that represent aggregated measures in the E3 calculator, Energy Division shall identify the appropriate installed measure(s) based on its measure verification results and develop the associated ex ante load impact values. For this purpose, Energy Division may use the utilities' tracking system information, engineering workpapers, DEER values and methods, or other current measurement and verification results that are available.

3.1.2. 2006-2008 Evaluation Management

In Decision 05-01-055, the Commission made the CPUC Energy Division responsible for managing and contracting for all evaluation, measurement and verification (EM&V) studies used to:

- Measure and verify energy and peak load savings for individual programs, groups of programs and at the portfolio level;
- Generate the data for savings estimates and cost-effectiveness inputs;
- Measure and evaluate achievements of energy efficiency programs, groups of programs and/or the portfolio in terms of the "performance basis" established under the CPUC-adopted EM&V protocols;15 and
- Evaluate whether program goals are met.

In August 2007, the CPUC awarded contracts for the performance of EM&V work in 13 energy efficiency program areas. Table 1 provides a list of the EM&V projects currently managed by ED. ED staff is involved in all aspects of contract and evaluation management, providing direction and oversight of the evaluation process. The resulting evaluation reports will be used to improve the future energy efficiency programs and policy, and inform the incentives mechanism set forth in Decision 07-09-43.

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[15] Available at http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Efficiency/EM+and+V/.

Table 1: Energy Division's Program EM&V Projects

Contract	Contractor
Marketing Outreach and Information	Opinion Dynamics Corporation
Emerging Technologies	Summit Blue Consulting, LLC.
Codes & Standards and New Construction	RLW Analytics, Inc.
Residential Retrofit	The Cadmus Group, Inc.
Small Commercial	Itron
Major Commercial	SBW Consulting, Inc
Commercial Facilities	ADM Associates
Specialized Commercial	RLW Analytics, Inc.
Commercial Retro-Commissioning	SBW Consulting, Inc
PG&E Agricultural	KEMA
PG&E Industrial	Itron
Southern California Industrial And Agricultural	Itron
Local Government Partnerships	Summit Blue Consulting, LLC.

3.1.2.1. Verification Activities

Energy Division obtained measure savings data for each program from the IOU Quarterly Reports submitted to the Energy Efficiency Groupware Application (EEGA)[16] for the period 1/1/2006 through 12/31/2007. Individual measures were then categorized into measure groups for each utility. A review of this measure mapping exercise indicated that a relatively small number of measure and program combinations accounted for approximately 80% of total utility-reported annual energy and demand savings. These program/measure group combinations were referred to as *high-impact combinations*. This clustering of reported utility annual energy and demand savings around a relatively small number of high impact combinations suggested that a coordinated approach across selected evaluation Contract Groups[17] would yield robust results at the utility portfolio level in the most cost effective manner. Furthermore, due to the complexity of the data and the size of the portfolios, it was impractical for Energy Division to evaluate, update, and review for clerical error every measure for which the utilities made savings claims. Therefore, a large number of the utility programs and a modest proportion of the claimed savings have not been evaluated, and utility estimates were used in the calculations in those cases.

The Contract Groups represented by the high impact combinations include:

- The Residential Retrofit Contract Group
- The Small Commercial Contract Group
- The Major Commercial Contract Group
- The PG&E Industrial Programs Contract Group

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[16] EEGA is the Energy Division's web-based report repository accessible at http://eega.cpuc.ca.gov for 2004-2005 programs and http://eega2006.cpuc.ca.gov for 2006-2008 programs.

[17] The term "Contract Group" is used to generally refer to the 13 EM&V contracts, the contractors responsible for performing the work under those 13 contracts, and the groups of programs those contractors are responsible for.

A fifth Contract Group, the Local Government Partnerships Contract Group, was added in anticipation of a large number of CFL giveaways coordinated by Local Government Partnership programs. Because these five Contract Groups accounted for such a large fraction of the kWh, kW, and therm savings for the IOUs, the Energy Division assigned verification tasks to only these five Contract Groups.

The list of measure groups analyzed in this Verification Report is shown in Table 2. The verification reports submitted to ED by the EM&V contractors are provided in Appendix A.

Table 2: Measure Groups Defined for the First Verification Study

Residential Measure Groups	Commercial Measure Groups
Appliances	Appliances
Appliances Recycling	Cooling
Cooling	Duct seal and AC tune-up
Duct seal and AC tune-up	Exterior lighting
Exterior lighting	Food Service
Glazing and skylights	Glazing and skylights
Heating	Heating
Interior lighting	HVAC Controls
Interior screw lighting	Interior lighting
Opaque Shell	Interior screw lighting
Other	Lighting controls
Water heating	Motors
Whole building and custom	Motor controls
Water heating controls	Opaque Shell
	Other
	Process
	Refrigeration
	Retro-commissioning
	Water heating
	Whole building and custom

4. The Minimum Performance Standard and Performance Earnings Basis

4.1. Minimum Performance Standard Overview

The RRIM earnings accrue if the utility meets or exceeds the Minimum Performance Standard (MPS), a threshold of 85% of the Commission's savings goals (80% for SoCalGas). If the utility achieves 100% of the goals, the earnings rate increases as a reward for superior performance. The 85% and 100% threshold earnings rates, set at 9% and 12% respectively, are used to calculate a share of the Performance Earnings Basis (PEB), which determines the amount of shareholder incentives that the utilities will be eligible to collect in electric distribution or gas transportation rates. The PEB is an estimate of the benefits created by the utility portfolio minus the costs of the utility portfolio, measured in monetary terms.

In order to determine if the utility has met any of the MPS thresholds, each individual utility's total accomplished cumulative net annual kWh, kW, and Therms savings are calculated as a percentage of the utility-specific 2007 cumulative goals adopted in D.04-09-060. In addition to an average goal attainment for all the metrics (kWh, kW, and Therms), each individual metric alone has a threshold requirement.

The key threshold requirements for the 2006-2007 interim earnings claim from Decisions 07-09-043, 08-01-042, and 08-12-059 are:

- If the metric average is equal to or greater than 65% and below 85% of goal (80% for SoCalGas), and each individual metric is equal to or greater than 65% of goal, then there are no earnings and no penalties.
- If the metric average is equal to or greater than 85% (80% for SoCalGas) and below 100% of goal, and each individual metric is equal to or greater than 80% of goal, then the IOU can claim 9% of PEB in earnings.
- If the metric average is equal to or greater than 100% of goal and each individual metric is equal to or greater than 95% of goal, then the IOU can claim 12% of PEB in earnings.
- If any individual metric falls to or below 65% of goal, then penalties will be applied.
- If a utility continues to exceed the 65% of savings goals threshold for each individual metric on an ex post basis, it will not be required to pay back any interim incentives payments earned. However, if ex post results indicate a utility has dropped below 65% of savings goals for any individual metric, the utility must pay back any interim payments earned, and penalties will be assessed

4.1.1. Components Included in the MPS Calculation

The total accomplished kWh, kW, and Therm savings included in the MPS calculation are the sum of the following quantities:

1. **The 2006 and 2007 EE portfolio *verified* kWh, kW, and Therm savings accomplishments.**
   - Except as noted below, the measure level parameters are as reported in the utilities' 4th Quarter 2007 Report E3 spreadsheets.
   - Measure level parameters from the utilities' program tracking systems are used where the E3 spreadsheet line items represent aggregated measures that do not match the program tracking database line items.
   - Installation rates for which samples of installations have been inspected by ED contractors to verify proper installation have been applied to most high-impact measure/program combinations.
   - Measure level parameters from the DEER 2008 update have been applied to many high-impact measure/program combinations.
   - Realization rates have been applied to a subset of measures which utilize a "customized" approach to provide impact estimates.

2. **50% of the 2006 and 2007 *verified* savings attributed to pre-2006 Codes and Standards advocacy work.**
   - This quantity consists of savings originally estimated by the IOUs as attributable to the codes and standards advocacy program, adjusted by the change in construction rates, the time lag in construction completion, and the effective date of appliance standards.

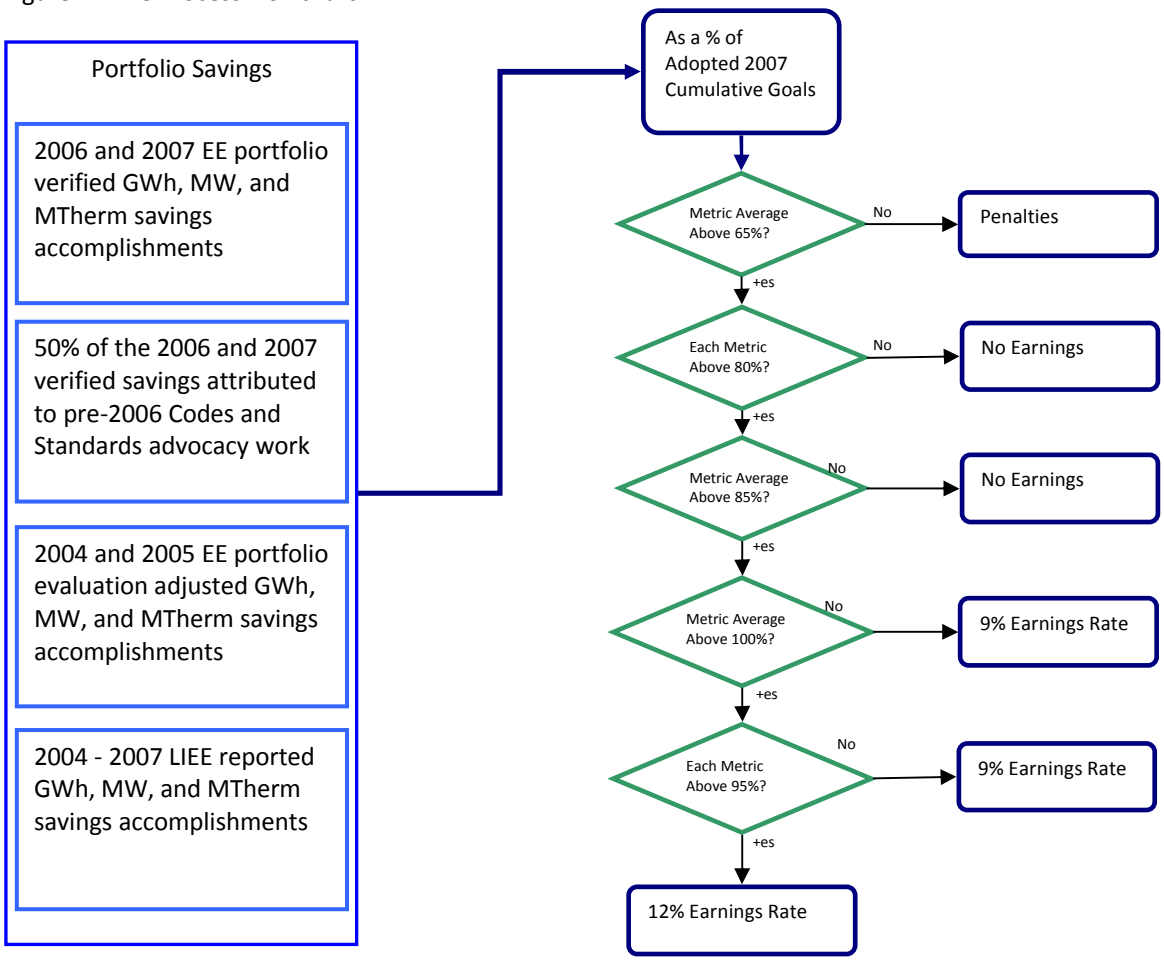
3. **The 2004 and 2005 EE portfolio *evaluation adjusted* kWh, kW, and Therm savings accomplishments.**
   - If an evaluation was completed, ED used the realized savings from the evaluation report.
   - If the evaluation of the program was completed, but realized savings for every program element were not explicitly provided in the evaluation report, or large gaps in ex-ante savings were evident, ED applied the net realization rate in the evaluation report to the filed net savings submitted in the final annual report for that program if disaggregated data was made available by the utilities, otherwise the workbooks available on EEGA were utilized.
   - If the evaluation of the program was complete, but a final evaluation report was not yet published, ED used the draft realized savings from the evaluation.

- If the evaluation was not complete, ED used the filed savings in the annual report, if available in disaggregated form, otherwise final program workbook posted on EEGA were used.

4. **The 2004 through 2007 LIEE program *evaluation adjusted* GWh, MW, and MTherm savings accomplishments.**
   - P+ 2005 savings come from the 2005 LIEE evaluation report.
   - The savings data for 2004, 2006, and 2007 comes from IOU LIEE reports filed with the CPUC.

The MPS process is illustrated in Figure 1.

Figure 1: MPS Process Flowchart



4.2. Performance Earnings Basis Overview

The PEB is a representation of net program benefits. The PEB is calculated by combining two-thirds of the Total Resource Cost (TRC) net benefits and one-third of the Program Administrator Cost (PAC) net benefits. The TRC and PAC are cost-benefit analysis methodologies commonly used for evaluating utility sector Demand-Side Management programs. The TRC and PAC costs include program administrative costs. The TRC additionally includes the costs incurred by program participants. The TRC and PAC benefits include estimates of supply-side costs avoided by the implementation of energy efficiency programs.

4.2.1. Components Included in PEB Calculation

All program costs and benefits are included the PEB calculation, with a few exceptions. Commission policy excludes certain costs and benefits that are either used only for measuring the MPS thresholds, are not measured through the evaluation process, or are excluded in order to encourage desired program activities which do not produce avoided cost benefits that can be directly measured and attributed. The following exceptions apply to the PEB costs and benefits:

1. The costs for the Emerging Technologies programs are not counted in the calculation of TRC and PAC costs.
2. The savings and costs attributed to pre-2006 Codes and Standards advocacy work are not counted in the calculation of TRC and PAC benefits.
3. The savings and costs for Low Income Energy Efficiency (LIEE) programs are not counted in the calculation of TRC and PAC costs or benefits.
4. The EE shareholder incentive earnings are not counted in the calculation of TRC and PAC costs.
5. Participant spillover, market effects, and most indirect impacts are not counted in the calculation of TRC and PAC benefits.
6. All other costs and avoided cost benefits are included the calculation of TRC and PAC net benefits.

4.3. Summary of the TRC and PAC Calculations

The TRC and PAC net benefits are calculated as described in the Standard Practice Manual,[18] and as clarified in D.06-06-063[19] issued in Rulemaking 04-04-025, the 12/21/2006 ALJ Ruling[20] issued in R.06-04-010, and modified for a "free-rider-adjustment" in D.07-09-043 issued in R.06-04-010. The TRC and PAC tests, and their application to the PEB calculation, are described in the Energy Efficiency Policy Manual,

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[18] Available at http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Efficiency/EM+and+V/
[19] http://docs.cpuc.ca.gov/PUBLISHED/FINAL+DECISION/57756.htm
[20] http://docs.cpuc.ca.gov/EFILE/RULINGS/63120.htm

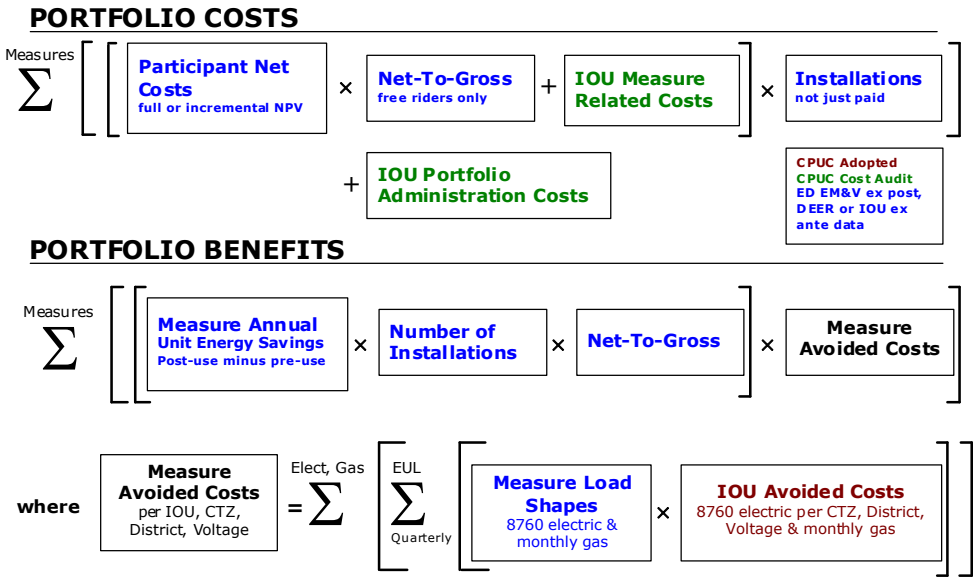
Version 4.0.[21] In summary, the TRC and PAC tests convert electric and gas energy and electric demand savings to monetized avoided cost benefits, and produce (using program administrative costs and program participant costs) benefit/cost ratios and monetized net benefit values.

The TRC and PAC methodologies specify how EE portfolio costs and benefits are calculated. All costs and benefits are specified to be calculated as the sum of the cost and benefit for each measure installed within an EE cycle as a result of the utilities' energy efficiency portfolio activities. The primary costs and benefits included in the TRC test are as outlined in Figure 2. The PAC benefits are equal to the TRC benefits but the PAC costs do not include any participating customer costs.

The TRC and PAC tests are calculated in a customized Excel spreadsheet known as the "E3 Calculator." The E3 Calculator performs the TRC and PAC cost/benefit calculations using the following data.

1. **Avoided Costs** – The latest Commission adopted values; most recently updated by D.06-06-063.
2. **Portfolio Administration Costs** – The total costs incurred to implement the utility programs, including measure costs such as rebates and other incentives (mid/upstream incentives and direct install costs).
3. **Measure Data** – All the measure specific parameters used in the TRC calculation outlined in the 1/2/2007 ALJ Ruling[22] issued in R.06-04-010.

Figure 2: TRC Benefits and Costs



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[21] http://docs.cpuc.ca.gov/EFILE/RULINGS/80684.htm
[22] http://docs.cpuc.ca.gov/EFILE/RULINGS/63294.htm

5. Overview of Data Used to Calculate MPS and PEB

5.1. 2006-2007 EE Data

The Energy Division relied on six primary sources of data to calculate the 2006-2007 program savings and benefits:

1. ***Program Tracking Data***
2. ***E3 Calculators***
3. ***Database for Energy Efficiency Resources***
4. ***Utility Work Papers***
5. ***Hardcopy Project Files***
6. ***Installation Rates from EM&V Contractor Verification Reports***

5.1.1. Program Tracking Data

The term "program tracking data" is generically used to refer to the elementary underlying information on program measures installed and rebated through the utility energy efficiency programs. Each utility has different systems and procedures for managing program related data. The program tracking databases contain detailed information on program participants and specific energy efficiency projects. Since the evaluators required facility-level customer specific information in order to design sampling plans for completing physical inspections of installations, the tracking data was used as the sample frame for most of the field verification activities.

5.1.2. E3 Spreadsheets

The utilities use the E3 calculator to calculate energy savings, demand reduction, and cost-benefit estimates on both a prospective (forecasting) basis and a retrospective (reporting) basis. The savings and cost-benefit calculations are based on measure level data, which is entered into the "input" sheet of the E3 calculator. The measure level data is used to calculate avoided cost benefits using the Commission-approved hourly avoided costmethodology.

In most cases, the line items in the E3 input sheet represent aggregations of cases from the program tracking databases, as can be seen in Table 3.[23] All measures listed in the E3 calculators should be reconcilable to the program tracking databases. In total, there are 212 E3 calculators, 136 of which actually report energy savings measures, resulting in 11,158 rows of measures.

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[23] It should be noted that ED believes the utilities continue to be out of compliance with the 2/21/2006 ALJ ruling issued in R.01-08-028 and the 8/8/2007 ALJ ruling issued in R.06-04-010, both of which require the utilities to report measure level data that is not aggregated in any way in their quarterly reports.

Table 3: Comparison of E3 Spreadsheet and Program Tracking Database Data

Utility	E3 Rows	Tracking DB Rows	Program Tracking Data Source Table
PGE	2,758	740,027	PGE+Frozen+Data+030108
SCE	7,717	1,278,526	tblProgramTrackingData
SDGE	544	166,231	CS1TM10+MSRS
SCG	139	178,953	CS1TM10+MSRS
Total	11,158	2,363,737	

The utilities are required to submit the E3 calculator inputs, calculation results, and calculation engines each quarter as part of their quarterly reports to ED. To avoid confusion, the E3 calculator inputs and results are referred to as the "E3 spreadsheet" throughout this report. The Excel tools that perform the savings and net benefits calculations are referred to as "E3 calculator" or "E3 calculator engine" throughout this report. For the 2006-2007 period, the Commission ruled in D.08-01-042 that the measure savings parameters in the utilities' E3 calculators submitted with the 4th quarter 2007 report are the ex-ante values to be used in conjunction with verified installations and verified costs to calculate the utilities' earnings claim.[24&25]

Table 4 lists the sources of the E3 calculator input/output files used for the 2006-2007 period.

Table 4: Source E3 Spreadsheets

ID	Utility	Report Name	Version	Report Period	Uploaded
978	SDGE	E3 calcs (from SDGE site).zip	1	Q4 2007	4/25/08
779	PGE	4Q07 E3 Calculators.zip	1	Q4 2007	3/3/08
819	SCE	SCE 4th Quarter 2007 E3 Calculators.zip	1	Q4 2007	3/10/08
975	SCG	E3 calcs (from SCG site).zip	1	Q4 2007	4/25/08

For the purposes of calculating the PEB, ED has updated parameters at either the tracking level of data or the E3 level of data.

It should be noted that the calculations of the TRC and PAC are derived from the utility specific E3 calculator engines identified in Table 5.

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[24] Ordering Paragraph 3 of D.08-01-042, provided in section 3.1.1.
[25] All of the E3 spreadsheets can be found under the "Quarterly Reports" link on http://eega2006.cpuc.ca.gov

Table 5: Source E3 Calculator engines

Utility	File Name	Source
PGE	PG&E Tool 4c.zip	http://www.ethree.com/downloads/E3%20Calculators/PG&E%20Tool%204c.zip
SCE	SCE Tool 4b (1000).zip	http://www.ethree.com/downloads/E3%20Calculators/SCE%20Tool%204b%20(1000).zip
SDGE	SDG&E Tool 4b (800).zip	http://www.ethree.com/downloads/E3%20Calculators/SDG&E%20Tool%204b%20(800).zip
SCG	SoCal Tool 4b (800).zip	http://www.ethree.com/downloads/E3%20Calculators/SoCal%20Tool%204b%20(800).zip

5.1.3. Database for Energy Efficiency Resources

As part of the ex-ante update required by Decision 08-01-042, Energy Division is using the latest MPS and PEB parameter values from the 2008 DEER Update for measures included in the DEER database. DEER is a database of Net-to-Gross (NTG), Effective Useful Life (EUL), and Unit Energy Savings (UES) values for standard or "deemed" energy efficiency measures. Deemed measures are energy efficiency projects and technologies that are relatively simple to analyze and evaluate, and do not vary tremendously with individual projects. Measures whose performance varies significantly due to the specifics of the individual projects are categorized as "custom" measures and are not currently covered by DEER UES values. However, DEER NTG and EUL values are used for custom measures.

NTG values are drawn from the most recent and/or applicable program evaluation studies. EUL values are based on a variety of sources including recent evaluation studies, utility workpapers, and various industry-specific data. UES values in DEER are generated using industry-standard building simulation software and engineering algorithms. Engineering algorithms are based on industry-standard engineering assumptions, originating from the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)[26] or other professional societies.

All of the studies, algorithms, assumptions, and building simulation tools are open source and available for review. The data sources, analytical approach documentation, user documentation, and user tools can be downloaded from the DEER web site.[27] The methods for applying the DEER update results to measures listed in the program tracking systems and E3 calculators are described in Section 6.2 of this report.

5.1.4. Utility Workpapers

The ex-ante savings assumptions for project-dependent custom measures are documented in utility workpapers.[28] Ordering Paragraph 4 of the 12/21/2006 ALJ Ruling requires the utilities to submit workpaper documentation on a quarterly basis that shows how the savings values are calculated for custom measures.

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[26] http://www.ashrae.org/
[27] http://www.deeresources.com/
[28] All of the workpapers can be found under the "Quarterly Reports" link on http://eega2006.cpuc.ca.gov.

In most cases, the utility workpaper values have been used in ED's MPS and PEB calculations. Exceptions to this rule are described in Section 6.5.

5.1.5. Hardcopy Project Files

In addition to the program tracking databases, the utilities maintain hardcopy paper records of the more complex energy efficiency projects and contracts. For sampled projects, it was essential to review the hardcopy project files in order to fully understand the project details, plan on-site inspections, and conduct analyses of data collected in the field.

5.1.6. Installation Rates from EM&V Contractor Verification Reports

ED authorized the EM&V Contract Groups in Table 6 to conduct verification studies of measure installations during the 2006-07 period:

Table 6: Contract Groups Responsible for Performing Verification Studies

Contract Group
Residential Retrofit
Small Commercial
Major Commercial
Local Government Partnerships
PG&E Industrial

The EM&V contractors conducted on-site inspections and surveys on sampled participants and non-participants to verify whether the measures recorded in the program tracking systems were actually installed and operational in the field. The outputs of this on-site and survey work are installation rates, which represent the ratio of measure counts observed in the field over measure counts reported in the program tracking databases. Installation rates are used to adjust the installation counts for populations of measures from which samples were drawn. Installation rates constitute one of the key adjustments made by ED in calculating the MPS and PEB.

The methods for obtaining installation rates through on-site inspections and surveys are discussed in detail in the verification reports submitted to ED by the EM&V contractors, provided in Appendix A. The methods for applying the installation rates to adjust the installation counts for populations of measures from which samples were drawn are discussed in section 6.3 of this report.

5.2. 2004-2005 EE Data

5.2.1. Methodology for compiling evaluated 2004-2005 savings

Resource acquisition programs implemented in the 2004-2005 cycle were subject to impact evaluations. Evaluation contractors were hired by the utilities starting in 2004 and final evaluation plans were approved by Energy Division staff. Program evaluations were conducted and the draft evaluation results were reviewed by the utilities, Energy Division staff, and Energy Division consultants. After considering input from all parties and making necessary revisions and edits, final evaluation reports were approved by Energy Division staff and posted on the California Measurement Advisory Council website (www.calmac.org), managed by the IOUs for the purpose of warehousing evaluation reports.

Each program evaluation was required to report realized annual electric and gas savings and demand reduction for 2004 and 2005 in an "Impact Reporting Table." The Impact Reporting Table follows a standardized format and is included in each final evaluation report, with a few exceptions. Savings reported in these impact tables were the primary source of information on evaluated accomplishments for the 2004-2005 programs.

To compile the evaluated savings for 2004-2005, the following rules were employed:

A. If an evaluation was completed, the realized savings from the evaluation report was used.
B. If the evaluation of the program was completed, but realized savings for each program funding component (PGC or Procurement) were not explicitly provided in the evaluation report, or large gaps in ex-ante savings were evident, ED applied the net realization rate in the evaluation report to the filed net savings recorded in the annual reports, where disaggregated data was made available.[29]
C. If the evaluation of the program was complete, but a final evaluation report was not yet published, Energy Division used the draft realized savings from the evaluation.
D. If the evaluation was not complete, ED used the filed savings in the annual report, if available in disaggregated form; otherwise, final program workbook posted on EEGA was used.

A - Programs with completed evaluations
Appendix B provides a list of programs and links to all evaluation reports and workbooks that were used in this estimate of evaluated savings.

B - Programs with completed evaluations that did not report realized savings
Annual savings for the programs in Table 7 were not specifically cited in the final evaluation reports, or significant gaps were identified during the review of the ex-ante

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[29] Available at eega.cpuc.ca.gov. Click "View Public Reports," check disclaimer box, click "view all programs" or select from menus, Annual reports did not include program-ID specific information for several of the programs in this list. Requests for disaggregated data were made to the utilities by Energy Division.

savings reported in the evaluation and the utility filed savings. To allow evaluation-adjusted credit for these programs, the filed savings (included in the annual report) were adjusted by the net realization rates reported in the evaluations. The spreadsheet in Appendix C contains the entire calculations ED used to apply the realization rates in the Table 7. Evaluation adjusted savings for SCE's Summer Initiative programs, which were missing from the draft verification report, were also added using the same approach.

Table 7: Programs for which Realized Savings were not Explicitly Provided in the Evaluation

Program ID	Utility	Funding	Program Name	Realization Rate Applied to Filed Savings	Source
1176-04	SCE-PROC	Proc	SW-MF Rebate	0.32 kWh 0.31 kW 0.15 Therms	Evaluation of the 2004-2005 Statewide Multifamily Rebate Program Evaluation – Vol 1. KEMA, March 16, 2007. Table 1-4 +Measured Savings+ % of reported accomplishments, Net kW, kWh, Therms pg. 1-9
1509-04	SDG&E-PROC	Proc			
1261-04	SCE	PGC	Savings By Design	0.82 kWh[30] 0.67 kW	An Evaluation of the 2004-2005 Savings By Design Program; RLW Analytics, October 2008 Revision; Table 9 (PG&E Impact table) Table 10 (SCE Impact table) Table 12 (SCG Impact table)
1506-04 and 1127-04	PG&E	Proc & PGC		0.68 kWh 0.59 kW 0.50 therms	
1249-04	SCG	PGC		0.05 therms	
1325-04	SCE	PGC	Bakersfield Kern Partnership – SCE and SCG	Residential 0.79 kWh 0.69 kW Commercial 0.46 kWh 0.78 kW	PG&E 2004-05 Local Government Partnership Programs December 12, 2006; EcoNorthwest Bakersfield Kern Results - Table 30 and 32 (Residential); Table 50 and 52 (Commercial.)
1230-04	SCG	PGC			
1520-04	SDG&E-PROC	Proc	Small Business Energy Efficiency	0.83 kW 0.49 kWh	Evaluation of the SDG&E 2004-05 Small Business Energy Efficiency Program April 20, 2006; EcoNorthwest; Table ES-7
1377-04	SDG&E	Proc	Single-Family EE Rebates - SDGEProc	Lighting 0.47 kWh 0.23 kW Non-Lighting 0.52 kWh 0.51 kW 0.37 therms	2004/2005 Statewide Residential Retrofit Single-Family Energy Efficiency Rebate Evaluation, Itron, October 2, 2007. Page 11-10
1160-04	SCE	Proc	Single-Family EE Rebates - SCEProc		
1505-04	PG&E	Proc	Residential EE		
1453-04	SCE	Proc	Small Nonresidential Hard to Reach Program	0.48 kWh 0.75 kW	Evaluation of the SCE 2004-05 Small Business Energy Connection Program, April 2, 2007; EcoNorthwest Table ES-6

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[30] Net realization rates were not provided in the SBD evaluation. Therefore, the adjustment factor in Table 6 was derived from the evaluation+s impact reporting table by dividing the net expost savings by the gross ex-ante savings and applied to the gross program savings as reported in the EEGA workbook. Gross savings are not provided in the annual report, but net savings in the final EEGA workbooks and in the annual report were nearly identical. For Savings by Design only, the missing portion of ex-ante savings was credited to SCE and PG&E (see Appendix C for calculations).

C - Programs with only draft evaluation results

As of January 9, 2009, the impact evaluation report for the VeSM program has yet to be finalized, but draft savings results are available. This program represents less than 1% of the expected savings for the 2004-2005 cycle.

D - Programs without completed evaluations

Four programs included in this analysis did not have a final or draft evaluation, for which ex-ante savings were adopted without adjustment. These were SCE's Small Business Lighting Campaign which was part of the summer initiative programs, and three of PG&E's pilot programs (Upstream Verified Charge and Airflow, Food Service, and Silicon Valley Leadership Group).

5.2.2. 2004-2005 Savings Results

Based on the rules outlined above, Table 8 was developed. The full spreadsheet used to generate Table 8 is provided in Appendix D. The first column represents the 2004-2005 cumulative savings that were filed by the utilities via workbooks posted on the EEGA website. The second column represents the cumulative savings provided in the evaluation reports, with the exceptions noted in the preceding text.

Table 8: 2004-2005 Cumulative Savings Estimates

	Ex-Ante EEGA Workbooks	Ex-Ante Annual Reports	[Draft VR] Ex-Post Evaluation Results	[Final VR] Ex-Post Evaluation Results
PG&E				
GWh-Annual	1,736.40	1,741.4	907.04	1011.6
MW	335.5	356.9	193.58	216.8
MMTherm - Annual	44.1	44.7	18.35	19.1
% GWh Goal	**117%**	**117%**	**61%**	68%
% MW Goal	**104%**	**110%**	**60%**	67%
% MMTherm Goal	**225%**	**228%**	**94%**	100%
SCE				
GWh-Annual	1,923.10	2,296.9	1079.54	1,498
MW	579.7	529.4	204.87	270.5
% GWh Goal	**116%**	**139%**	**65%**	91%
% MW Goal	**174%**	**159%**	**61%**	81%
SDG&E				
GWh-Annual	611.9	632.4	365.82	342.6
MW	115.5	121.3	63.98	59.3
MMTherm-Annual	8.9	3.6	4.40	4.5
% GWh Goal	**114%**	**118%**	**68%**	64%
% MW Goal	**115%**	**120%**	**64%**	59%
% MMTherm Goal	**247%**	**100%**	**122%**	126%

SCG				
MMTherm-Annual	26.1	26.3	11.1	11.1
% MMTherm Goal	**135%**	**136%**	**58%**	58%

5.2.3. Impact tables which include savings realized after 2005

A handful of programs have evaluation reported annual savings estimates that increase after 2005. This appears to be due to program extensions, late start-ups, and projects that were implemented after the 2005 programs closed. Table 9 lists the programs for which the evaluation reported annual savings estimates are realized after 2005.

In the comments presented by the utilities, several expressed concern that the statewide Energy STAR New Homes and Savings by Design programs were not included in the list on table 9. They were not included because the impact tables in the evaluation for each of these programs did not include a ramp-up or ramp-down of savings. The annual savings were the same from 2004 - 2008.

There were no additional savings credited for Savings by Design or CA Energy STAR New homes for projects that may have been installed after 2005 but were not included in the May 2006 annual report (which includes commitments).

Table 9: Programs for which Annual Evaluated Savings are Greater in 2006 than in 2005

Programs	Utility	Funding	Program Name
1066-04	SCE	PGC	H&L Energy Savers - Performance4
1085-04	PG&E	PGC	Small Business Energy Alliance
1086-04	SCE	PGC	Small Business Energy Alliance
1487-04	SCG	PGC	ADM Mobile Energy Clinic
1285-04	SDG&E	PGC	B.E.S.T – SDREO
1301-04	SDG&E	PGC	San Diego Region Local Government Energy Efficiency
1311-04	SCE	PGC	Residential Duct Services
1327-04	SCG	PGC	Residential Duct Services
1381-04	SDG&E	PGC	Retrocommissioning Program
1500-04	SDG&E	PGC	Rebuild a Greener San Diego
1383-04	SDG&E	PGC	San Diego City Schools Retrofit Partnership
1320-04	SDG&E	PGC	Local Nonresidential Customer Energy Savings Bid
1121-04	PG&E	PGC	Standard Performance Contract – PGE
1347-04	SDG&E	PGC	Standard Performance Contract – SDGE
1240-04	SCE	PGC	Standard Performance Contract - SCE

For program evaluations in which the highest annual savings occurred after 2005 the annual savings reported after 2005, which includes all the savings attributable to 04-05 activities, are counted instead of the savings reported for 2005.

Note Table 10 for example. The cumulative annual savings for 04-05 activities is reported for Express Efficiency in the year 2005; for Residential Duct Services and SPC the total annual savings attributable to the 04-05 activities is achieved in 2006 and 2008 respectively. The savings counting toward the MPS are the highest annual savings reported in the evaluation impact tables.

Table 10: Examples of Savings Realized After 2005

				2004	2005	2006	2007	2008	2009
1133-04	PG&E	Express – PGE	MWh	30,137	**72,027**	72,027	71,867	58,655.52	36,403
1327-04	SCG	RDS	MWh	99	2,095	**2,181**	2,181	2,181	2,181
1121-04	PG&E	SPC – PGE	MWh	18,699	81,602	94,449	150,041	**150,371**	150,358

5.3. 2004-2007 LIEE Data

The LIEE data used to calculate the IOU portfolio savings for 2005 come directly from table E3 of the "Impact Evaluation of the 2005 California Low Income Energy Efficiency Program Final Report."[31] The savings data for 2004, 2006, and 2007 come directly from the IOU annual LIEE reports filed with the CPUC.[32] After analyzing the annual LIEE reported claims and the 2005 LIEE evaluation report, Energy Division concluded that the effort required to adjust the claimed savings using the 2005 LIEE evaluation report in a valid manner was not possible for this interim report.

Demand impacts were not required and therefore not reported for 2004 and 2005 LIEE programs. Energy Division staff extrapolated demand impacts for those years by calculating the average ratio of demand over energy impacts for 2006 and 2007, and used that ratio to estimate the 2004 and 2005 demand impacts. Table 11 provides the savings numbers used for the LIEE programs.

Table 11: 2004-2007 LIEE Program Savings

PG&E	GWh	MW	MMTherms
2004	20.13	4.14	0.87
2005	24.68	4.59	1.03
2006	27.92	6.01	1.45
2007	27.55	5.41	1.21

SCE	GWh	MW	MMTherms
2004	15.29	3.32	N/A
2005	18.00	2.92	N/A
2006	26.76	5.81	N/A
2007	21.14	4.59	N/A

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[31] Available at http://www.liob.org/docs/LIEEP+05FinalReport1-10-08.pdf
[32] Available upon request

SDG&E	GWh	MW	MMTherms
2004	6.89	1.79	0.26
2005	4.64	0.80	0.15
2006	5.31	1.98	0.28
2007	4.43	0.65	0.22

SoCalGas	GWh	MW	MMTherms
2004	0.13	N/A	1.03
2005	0.38	N/A	0.71
2006	0.27	N/A	0.83
2007	0.00	N/A	0.89

5.4. Pre-2006 Codes and Standards Advocacy

An Energy Division contractor performed an initial verification of the energy savings estimated to have resulted from the Pre-2006 Codes and Standards advocacy program. The EM&V verification report is provided in Appendix H. The verification for this report consisted of adjusting the savings originally estimated by the utilities by taking into account the change in construction rates, the time lag between when a permit is issued and construction is completed, and the effective date of appliance standards. Resulting adjustments to MPS metrics ranged from 72% for SCE MW to 109% for all therm savings realized in 2007. The claimed and adjusted savings numbers are provided in Tables 12 through 14

Table 12: Interim Adjusted and Claimed Codes and Standards Advocacy Electricity Savings, GWh

Year	Utility	Title 20		Title 24		Total		
		Claimed	Adjusted	Claimed	Adjusted	Claimed	Adjusted	% of Claimed
2006	PG&E	23.7	21.4	14.2	12	37.9	33.4	88%
	SDG&E	5.6	5	3.3	2.8	8.9	7.8	88%
	SCE	24.5	22.2	19.8	10.6	44.3	32.8	74%
	SCG	NA	NA	NA	NA	NA	NA	NA
2007	PG&E	23.7	22.8	15.4	12.9	39.1	35.8	91%
	SDG&E	5.6	5.3	3.6	3	9.2	8.4	91%
	SCE	25.7	24.7	18.4	11.8	44.1	36.5	82%
	SCG	NA	NA	NA	NA	NA	NA	NA

Table 13: Interim Adjusted and Claimed Codes and Standards Advocacy Demand Savings, MW

Year	Utility	Title 20		Title 24		Total		
		Claimed	Adjusted	Claimed	Adjusted	Claimed	Adjusted	% of Claimed
2006	PG&E	3.5	3.3	7.5	6.4	11	9.7	88%
	SDG&E	0.8	0.8	1.8	1.5	2.6	2.3	88%
	SCE	3.8	3.5	8.6	5.4	12.4	9	72%
	SCG	NA	NA	NA	NA	NA	NA	NA
2007	PG&E	3.7	3.6	8.2	6.5	11.9	10.1	85%
	SDG&E	0.9	0.8	1.9	1.5	2.8	2.4	85%
	SCE	4.2	4.1	8	5.6	12.2	9.7	80%
	SCG	NA	NA	NA	NA	NA	NA	NA

Table 14: Interim Adjusted and Claimed Codes and Standards Advocacy Natural Gas Savings, MMtherms

Year	Utility	Title 20		Title 24		Total		
		Claimed	Adjusted	Claimed	Adjusted	Claimed	Adjusted	% of Claimed
2006	PG&E	0.6	0.6	0.4	0.4	0.9	1	96%
	SDG&E	0.1	0.1	0	0	0.1	0.1	96%
	SCE	NA	NA	NA	NA	NA	NA	NA
	SCG	0.9	0.9	0.6	0.7	1.5	1.6	105%
2007	PG&E	0.5	0.5	0.3	0.4	0.8	0.9	109%
	SDG&E	0.1	0.1	0	0	0.1	0.1	109%
	SCE	NA	NA	NA	NA	NA	NA	NA
	SCG	0.8	0.8	0.5	0.7	1.3	1.5	109%

5.5. 2006-2007 Audited Costs

The objectives of the CPUC's Utility Audit, Finance, and Compliance Branch's (UAFCB) audit were to (1) assess the utilities' accounting system and procedures related to the energy efficiency programs and determine if expenditures were properly recorded and reported to the Commission, (2) determine if the utilities' compliance with Commission directives and internal policies for customer enrollment, energy education, installation costs and measures, inspections, (3) assess the utilities' effectiveness in implementing its energy efficiency programs and ascertain that the utility had adequate processes in place between itself and its contractors, (4) ascertain that the utilities internal control and management oversight within the energy efficiency programs were properly in place and executed, and (5) review actions taken by the utilities' on prior audit recommendations and findings.

The UAFCB analyzed and reviewed documents provided by the utilities', randomly sampled selected project files for supporting documentation of eligibility, for evidence of measure installations, inspections and costs data. The UAFCB also conducted reviews

of post-inspection reports, had several correspondence and interviews with utility management, and performed such other procedures as deemed necessary in the circumstances.

An audit of the utilities' 2006-2007 energy efficiency costs resulted in the allowance of all cost items. Although the audit report identified a number of potential problems, these were not significant enough to warrant adjustments to the utilities' cost claims.

The absence of disallowances means that the results of this audit will not have an impact on the calculation of the PEB. The TRC and PAC calculations are therefore conducted with utility reported cost provided in the E3 calculators. The CPUC audit staff are working with the utilities to agree on public version of the report.

6. Methodology for Calculating 2006-2007 Savings and Benefits

The total EE portfolio consists of 136 programs that report savings, totaling over eleven thousand measures in the E3 spreadsheets and over 2.3 million records in the program tracking databases. In order to calculate the 2006 – 2007 savings, as directed in D.08-01-042, Energy Division replaced certain utility claimed values with new values derived from the EM&V field and survey work or the 2008 DEER update. This is referred to as "update" or "DEER update" throughout this report and is not to be confused with the process that resulted in the 2008 DEER Update values. To make this update process manageable, Energy Division limited the DEER updates to the 13 programs that were part of the verification study and together comprised approximately 76% of the portfolio impacts. Furthermore, the measures within these programs were only updated if they were part of the verification sample. As a rule, all other measures and all other programs have been "passed through" in the VRT (see 6.1, below), meaning that the utility-reported values in the E3 spreadsheet for these measures and programs were used in the final calculation of the PEB without modification. Within these program and measure combinations, a set of measure groups have been defined and selected for the verification study, as such, measures categorized within these measure groups were updated in the VRT.

Tables 15 and 16A list the programs and measures that were part of this update. Table 16B provides the proportion of savings updated by this report. An excel workbook providing the measure group definitions is provided in Appendix L.

Table 15: Programs updated in this report (The numbers below are utility reported savings)

Program ID	Program Name	GWH	%	Cum %	MW	%	Cum %	MM TH	%	Cum %
PGE2000	Core Mass Market RES	933	18%	18%	146	17%	17%	4	6%	6%
PGE2004	Fabrication, Industrial, Manufacturing	114	2%	21%	14	2%	19%	13	18%	24%
PGE2080	Core Mass Market NRES	822	16%	37%	170	20%	38%	6	8%	32%
SCE2501	Residential Energy Efficiency Incentives	1211	24%	61%	164	19%	57%			32%
SCE2511	Nonresidential Direct Installation	205	4%	65%	36	4%	62%			32%
SCE2517	Business Incentives & Services	437	9%	73%	78	9%	71%			32%
SCG3507	Express Efficiency Rebate Program			73%			71%	14	21%	52%
SCG3513	Local Business Energy Efficiency			73%			71%	9	13%	65%
SDGE3010	Energy Savings Bids	59	1%	74%	9	1%	72%	1	2%	67%
SDGE3012	Express Efficiency	38	1%	75%	7	1%	72%	1	1%	67%
SDGE3016	Upstream Lighting	204	4%	79%	18	2%	75%			67%
SDGE3020	Small Business Super Saver	144	3%	82%	30	3%	78%	1	1%	68%
SDGE3025	Standard Performance Contract	13	0.3%	82%	2	0%	78%	0	0.3%	69%

Table 16A: Measure Groups updated in this report

PGE	SCE	SDGE	SCG
Upstream Res Interior screw lighting	Upstream Res Interior screw lighting	Upstream Res Interior screw lighting	C&I Steam trap
Upstream C&I Interior screw lighting	Upstream C&I Interior screw lighting	C&I Linear fluorescent	C&I Process - unknown
C&I Process - unknown	C&I Linear fluorescent	C&I Lighting - measure unknown	C&I Pipe and tank insulation
C&I Interior screw lighting	Res Recycle refrigerator	C&I Cooling - measure unknown	C&I Process boiler
C&I Strip curtain	C&I Process - unknown	C&I High bay fluorescent	C&I Greenhouse heat curtain

Table 16B below reflects the total lifecycle net kWh, kW, and lifecycle net therms of all measures that received an update through this process. This is different from Table 15, which shows the cumulative savings at the program level .

Table 16B: Measure Groups updated in this report

	Lifecycle Net kWh	User Entered kW	Lifecycle Net Therms
PGE	77%	84%	75%
SCE	75%	76%	
SDGE	84%	67%	62%
SCG			64%
All	**77%**	**78%**	**69%**

6.1. Verification Reporting Template (VRT)

The VRT is a Microsoft (MS) Access application developed by ED. The VRT was developed to allow Energy Division to calculate the MPS and PEB in an efficient, transparent, and repeatable manner. This application is used to compile and process two types of data:

A. **IOU savings and cost claims**. These were submitted as standard E3 spreadsheets for each program, covering all 2006-08 program activities through December 31, 2007. These E3 spreadsheets list savings and related parameters for each measure line item in the +input+ sheet of each workbook. They also document program level savings, costs and net benefits. All data from all E3 spreadsheets were compiled and are part of the VRT application. The utilities submitted 212 E3 spreadsheets, covering activity for 210 programs.[33] One hundred and thirty six of these programs claimed savings. E3 spreadsheets were submitted for the other programs in order to document program costs.

B. **Program tracking data**. The VRT establishes a standardized program-tracking level data format. The format includes three types of data fields: IOU E3, IOU Program Tracking, and ED Update. For selected programs (that account for a combined 76% of the total portfolio savings claim), data records were compiled

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[33] The E3 Calculator used by each IOU support a maximum number of measure line items on the +input+ sheet. The number varies across the versions for each IOU.

at the program tracking level, starting with the IOU program tracking submittals for 2006-07 and adding data from the matched IOU E3 spreadsheets and data developed by ED for adjusting installation rates, NTG, EUL and UES.

The VRT application supports the following verification activities:

A. **Automated E3 Runs**. Using either input line items from the E3 spreadsheets or program tracking records, the VRT can run the approved[34] E3 calculator engines. As each program is run, the savings and net benefits results are accumulated.

B. **Portfolio Summary**. The VRT can summarize savings and net benefits across all runs, by IOU, and place these results in the RRIM calculator.[35]

Please refer to the VRT User's Manual in Appendix F for instructions on how to use the VRT to perform the Automated E3 runs and Portfolio Summary activities listed above. The full VRT and associated files are provided in Appendix G.

There are many parts to the VRT, but the core process involves a few key steps that are described in the following sections:

A. Populating the VRT with all Measures to be Updated *(section 6.2)*

B. Updating Measures in the VRT with Installation Rates and DEER Parameters *(section 6.3)*

C. Running the VRT to Calculate Adjusted Energy Savings and PEB Values *(section 6.4)*

These sections describe the methods used to calculate the utilities' savings and net-benefits using installation rates produced by the EM&V contractor's field and survey work, and using the 2008 DEER values for UES, NTG and EUL. Figures 3 through 6 illustrate this process at a high level. Each step is described in more detail below.

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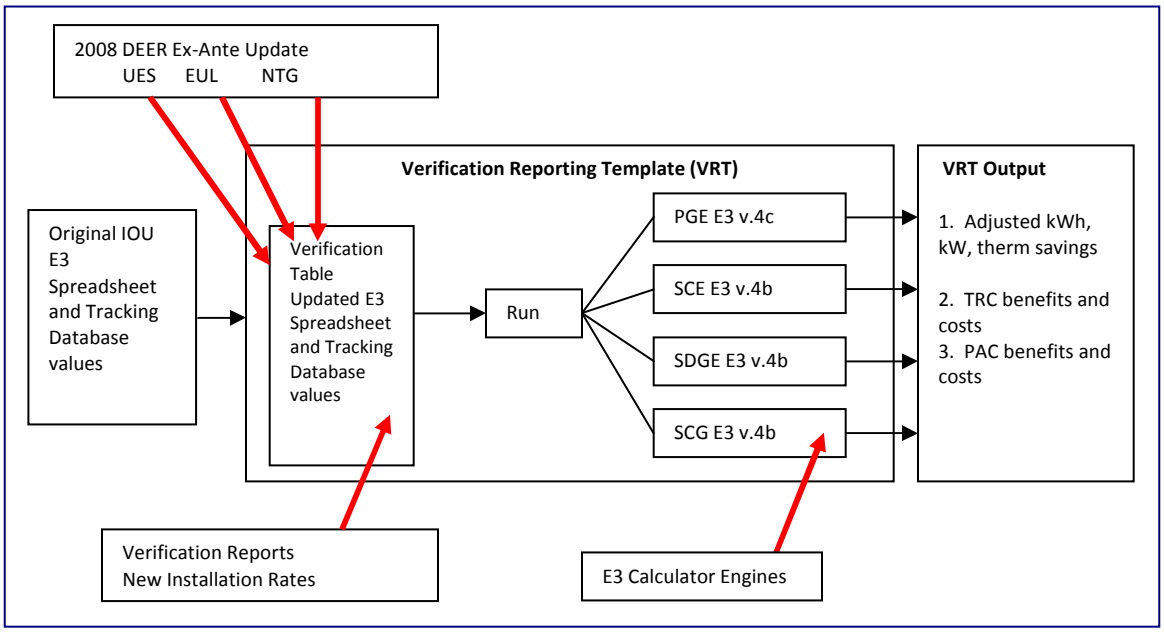
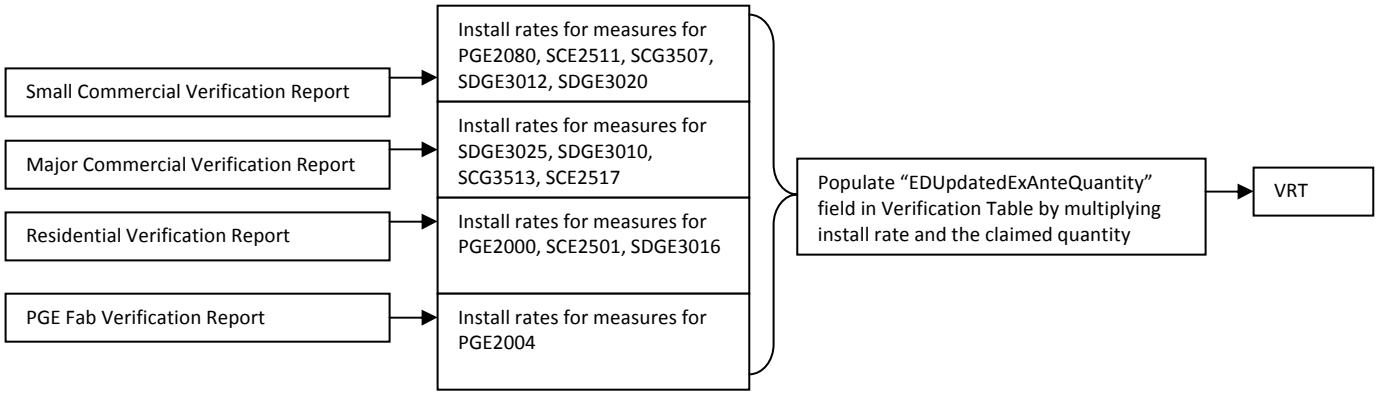
[34] E3 Calculators in Compliance with Decision 07-09-043. Updated 9/22/08.
[35] The RRIM Calculator is described in Section 7 of this report and is provided as part of Appendix G.

Figure 3: VRT Process Flow Chart



The box labeled "Verification Reports – New Installation Rates" in Figure 3 is examined in more detail in Figure 4 below. The measure group specific installation rates were derived from the contractor verification studies and applied to the measures that comprise the programs selected for this update. The installation rates found in the verification studies may differ from the installation rates used in the VRT due to differences in how clerical errors found in the utilities program tracking databases and E3 spreadsheets were treated in the EM&V contractor verification studies. Finally the installation rates were applied to the corresponding measures in the Verification Table of the VRT. Once this was done, the VRT calculations were based on the ED updated installation counts that were adjusted by the installation rates.

Figure 4: Installation Rate to VRT flow chart



The box labeled "2008 DEER Ex-Ante Update - UES EUL NTG" in Figure 3 above is examined in more detail in Figures 5 and 6 below. The 2008 DEER Update UES values were compiled into a database referred to as the "Interim Database." The Interim Database was used to match UES values to specific measures. Once the matching of UES to measures was completed, the 2008 DEER Update values for the measures being updated were loaded into the VRT. Once this was completed, the VRT calculations were based on the ED updated UES values. Similarly, the 2008 DEER Update NTG and EUL spreadsheets were used to match NTG and EUL values to specific measures. Once the matching of NTG and EUL to measures was completed, the 2008 DEER Update values for the measures being updated were loaded into the VRT and the VRT calculations were based on the ED updated NTG and EUL values.

Figure 5: UES to VRT flow chart

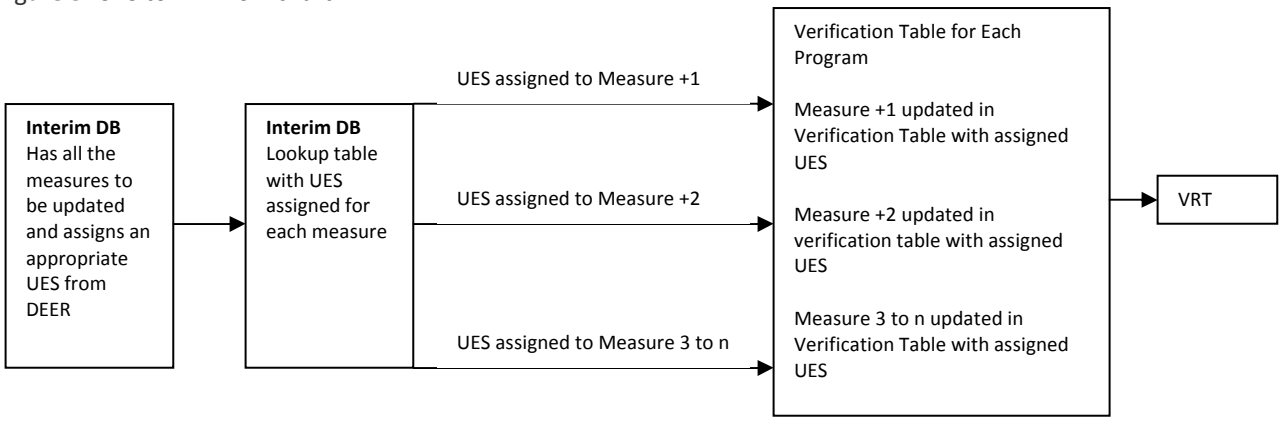
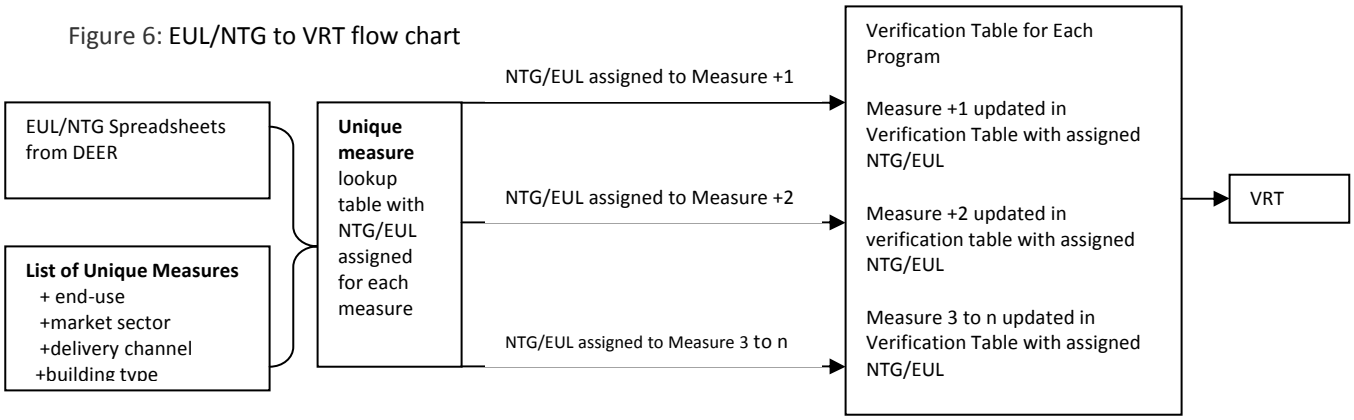


Figure 6: EUL/NTG to VRT flow chart



6.2. Populating the VRT with All Measures to Be Updated

The verification table in the VRT was modeled after the "Input" sheet of the E3 spreadsheet and consists of 128 variables. This table is the core component of the VRT as it contains measure level values from the E3 spreadsheet, the program tracking databases and the Energy Division updates.

Each of the 128 variables has a specific set of rules that were applied when the verification table was populated. As an example, the following rules were applied to the variable, "climate zone," which has a value from the utility E3 spreadsheet, the utility program tracking database, and an ED updated value.

- First, the climate zone value from the E3 spreadsheet was entered into the variable called *IOUE3ClimateZone;*
- Next, the climate zone value from the utility program tracking database was entered into the variable called *IOUPrgTrkClimateZone*;
- Then a zip code entered into the variable *IOUPrgTrkSiteZIPCode* was matched using a zip-code-to-climate-zone lookup table;
- If there was a match, then the associated climate zone was used as the value for the variable *EDUpdatedClimateZone;*
- If there was no match, then the value was set to the value in the variable *IOUPrgTrkClimateZone;*
- If *IOUPrgTrkClimateZone* was missing, the value was set equal to that in the variable *IOUE3ClimateZone*;
- Finally, if none of the above rules worked, the value was set to "System."

Complete documentation of the rules are included as part of Appendix G in the file entitled "VRT+DB+Fields+MarkUp(v.4+4).doc".

In addition to applying a consistent set of rules, there was a significant amount of data mapping between the program tracking database records and the E3 spreadsheets prior to populating the Verification Table in the VRT. Each program tracking database record was associated with one of the input measure line items in the utility E3 spreadsheets so that certain data values not present in the program tracking data, e.g., incremental cost, could be associated with a value found in the E3 spreadsheet.

Numerous adjustments and calculations were required in order to successfully map program tracking data to the E3 spreadsheets. Please see Appendix N for a list of the files (spreadsheets, SAS files, etc.) that document this detailed work, which are available upon request. The following list is a general summary of the procedures undertaken during this mapping exercise:

A. SDG&E/SoCalGas measures were mapped by matching "Measure Codes" provided in the program tracking data with the first part of the "Measure Name" in the E3 spreadsheets;

B. SCE measures were mapped based on a number of fields including "DEER RunID," "Climate Zone," "Target Sector" and "Measure End Use Shape";

C. PG&E measures were mapped by collapsing the list of measures in the E3 spreadsheet to unique records of measure name, climate zone, and EUL. The measure names in the program tracking database were an exact match with the

measure names in the E3 spreadsheets. The climate zones in the tracking database were labeled with a "Z" preceding the number, e.g. "Z10" for climate zone 10. By using the number portion of the climate zone or a "System" value, the climate zones were mapped. The EUL values found in the E3 spreadsheet were mapped to the tracking data using a combination of the building type and measure name from the tracking data;

D. Measure names were sometimes transposed and had to be corrected so that measure names in the E3 spreadsheets matched program tracking database measure names;

E. Some measure records in the program tracking database required summation to create a unique key to link back to the measures in the E3 spreadsheet;

F. Some date fields used to allocate quarterly quantities had to be cleaned and reformatted; generally the "installation date" field in the program tracking database was used to determine the quarter in which each measure was installed;

G. Some of the "unit definition" fields had to be cleaned up in order to properly match records. For instance, the "units" for the electric and dual-fuel measures were set to kWh, and the "units" for the gas measures were set to therms.

H. Mapping the proper measures values for upstream lighting required the use of "System" climate values for PG&E and SDG&E since there is not information of delivery area (retail outlet where bulbs were sold) as was provided in the SCE tracking data.

Once the mapping was complete, and the rules consistently applied, the verification table was functional within the VRT, in other words, the VRT was able to properly reference the values in the verification table, perform the automated E3 runs and generate a portfolio summary file.

To illustrate which fields are selected by the VRT in the final calculation, the NTG and EUL fields are described in Table 17:

Table 17: Example of EUL and NTG data fields in the VRT

Verification Table Fields	Sample Values	Description
IOU+E3+Ex+Ante+EUL	7	The EUL for this measure in the E3 file was seven years
IOU+PrgTrk+Ex+Ante+EUL	7	The EUL for this measure in the utility tracking database was also seven years
ED+Updated+Ex+Ante+EUL	7	Based on the information known for this measure, the 2008 DEER ex-ante update EUL was also seven years
IOU+E3+Ex+Ante+NTGR	.8	The NTG for this measure in the E3 file was .80
IOU+PrgTrk+Ex+Ante+NTGR	.8	The NTG for this measure in the utility tracking database was also .80
ED+Updated+Ex+Ante+NTGR	.64	Based on the information known for this measure, the 2008 DEER ex-ante update NTG was .64

By referencing both the program tracking database and E3 spreadsheet data sources, the changes made by ED (fields that begin with "ED+Updated") are more transparent and reviewable. In the example above, both the E3 spreadsheet and program tracking database records show an EUL of seven years for a particular measure. This is captured in the VRT under the fields *IOU_E3_Ex_Ante_EUL* and *IOU_PrgTrk_Ex_Ante_EUL*. The updated EUL for this particular measure, based on the 2008 ex-ante DEER Update EUL spreadsheet, is also seven years. This updated value is captured in the VRT under the field, *ED_Updated_Ex_Ante_EUL*. The values in this field are referenced by the VRT when the final PEB values are calculated.

In the EUL scenario, there is no change between the utility reported values and the Energy Division updates, but in the NTG example, the *ED_Updated_Ex_Ante_NTGR* is now .64, down from the utility reported value of .8 for both *IOU_E3_Ex_Ante_NTGR* and *IOU_PrgTrk_Ex_Ante_NTGR*. The .64 value is based on the 2008 DEER Update NTG spreadsheet, and will be the value that is referenced by the VRT when the final PEB value is calculated.

6.3. Updating Measures in the VRT with Installation Rates and DEER Parameters

6.3.1. Methodology for Updating Installation Rates in the VRT

The installation rate is a variable (*EDInstallRate*) in the Verification Reporting Template, which is used to adjust the claimed quantity for the population of measures covered by the verification study for each IOU.

The calculation of *EDInstallRate* for downstream measure groups is different than that for upstream measure groups (most notably CFLs). Each calculation is described below, followed by a description of the treatment of the measure groups that were excluded from the Verification Study.

6.3.1.1. Installation Rate: Downstream Measure Groups

For each sampled case ("*i*") from the program tracking databases, the quantity based on the verification survey inspections (*EDInspectionExAnteQuantity*) is divided by the quantity found in the IOU-supplied hardcopy project files for that same case. Equation 1 below illustrates this calculation.

$$\text{EDInstallRate}_i = \frac{\text{EDInspectionExAnteQuantity}_i}{\text{EDFileReviewExAnteQuantity}_i} \quad (1)$$

Where:

$EDInstallRate_i$=	The installation rate for the i^{th} case
$EDInspectionExAnteQuantity_i$=	The result of the ED on-site verification of installation for the i^{th} case
EDFileReviewExAnteQuantity$_i$=	The result of the review of the hardcopy project files of the rebated measure or project for the i^{th} case

When the quantity for a given sampled case in the program tracking database did not agree with the quantity in the hardcopy project files for the same case, the quantity in the hardcopy project files (*EDFileReviewExAnteQuantity*) took precedence. The rationale for doing this is that the number of units that a verification surveyor expected to see is represented in the *EDFileReviewExAnteQuantity*, which is based on a review of the hardcopy project files listing the specific measures, the size of the rebate for each measure, and a record of payment being made to the customer. Therefore, the values in *EDFileReviewExAnteQuantity* were assumed to be more accurate.

One of the original goals of the Contractor Verification Report was to correct clerical errors (e.g., an incorrect quantity or savings number is entered into the program tracking database) and incorporate the correction into the *EDInstallRate*. This level of review could only be completed for a small proportion of measures and programs. Thus, the *EDInstallRate* is mostly based on verified and utility claimed installations, where the utility claimed installations and savings estimates may contain an unknown number of data entry errors.

An overall savings-weighted installation rate is calculated based on the results *across all sampled cases*. For each case, the ex-ante gross kWh savings in the program tracking database (*IOUPrgTrkExAnteGrSavkWh*$_i$) is multiplied by the *EDInstallRate*$_i$. The result is then summed across all sampled cases and divided by the sum of the ex-ante gross kWh savings (*IOUPrgTrkExAnteGrSavkWh*$_i$) across all sampled cases. Equation 2 illustrates this calculation.

$$\text{EDInstallRate} = \frac{\sum_{i=1}^{n} \text{EDInstallRate}_i \times \text{IOUPrgTrkExAnteGrSavkWh}_i}{\sum_{i=1}^{n} \text{IOUPrgTrkExAnteGrSavkWh}_i} \qquad (2)$$

where

EDInstallRate=	The overall savings-weighted installation rate for a given measure group or stratum
$EDInstallRate_i$=	The installation rate for the i^{th} case
IOUPrgTrkExAnteGrSavkWh$_i$=	The ex ante gross savings in the IOU program tracking database for the i^{th} case

These samples are typically stratified random samples or simple random samples. In situations where simple random samples were drawn, the weighted installation rate is used to adjust the quantity variable (*EDFilledExAnteQuantity*) for each case in the population from which the sample was drawn. In situations where stratified designs were employed, the installation rate within a given stratum was used to adjust the quantity variable (*EDFilledExAnteQuantity*) for each case in the stratum population from which the sample was drawn. The resulting variable from these calculations (*EDUpdatedExAnteQuantity*) was then spread, using various date variables available in the program tracking databases, across the eight quarters for 2006 and 2007.

6.3.1.2. Upstream Screw-In CFLS

The *EDInstallRate* for upstream screw-in CFLs and lighting fixtures for the residential and small commercial sectors was based on telephone interviews.

6.3.1.3. Residential Screw-In CFL Installation Rates

The installation rate characterizes the in-service rate for screw-in CFLs. The in-service rate is defined as the percent of purchased screw-in CFLs that are actually installed. The number of bulbs (*IOUPrgTrkExAnteQuantity*) recorded in the program tracking databases as shipped from manufacturers to participating retailers are adjusted using the *EDInstallRate*.

The *EDInstallRate* is estimated for each of the three electric utilities based on telephone surveys of a random sample of the population of residential customers. Respondents were asked whether they had purchased screw-in CFLs and, if they had, what percentage they had actually installed at a residence located within the utility's service territory.

The *EDInstallRate* does not include any adjustments for leakage (utility rebated products that leave the service territory) or adjustment for lamps that are placed in storage rather than being immediately used.

6.3.1.4. Nonresidential Screw-In CFL Installation Rate

For the purposes of the analysis covered by this report, the in-service rate for nonresidential lamps and lighting fixtures was set to 1.0. This assumption is known to be higher than actual and will be trued-up as part of the ongoing program evaluation.

6.3.1.5. Installation Rates: Excluded Measure Groups

Two classes of measure groups were excluded from any adjustments to their reported quantities:

A. Programs that contained one or more measure groups that were selected for verification also contained measure groups that were not selected for verification because of their relatively small savings. For such measure groups, the default value of 1.0 was assigned to the *EDInstallRate* and applied to the quantity variable (*EDFilledExAnteQuantity*) for the population of all measures within the given program's program tracking database.

B. For programs whose measure groups were not subjected to any verification, the default value of 1.0 was assigned to the *EDInstallRate* and applied to the quantity variable (*EDFilledExAnteQuantity*) for the population of all measures within a given program's program tracking database.

All of the verification reports can be found in Appendix A of this report.

6.3.2. Methodology for Updating EUL and NTG Values in the VRT

The following files were used to create lookup tables to update tracking level data with updated Net-To-Gross and Effective Useful Life values:

***NTG**: Updated DEER NTG Values for 2006-07 final 2008-10-10.xls*[36]

***EUL**: EUL_Summary_10-1-08.xls*[37] **and** *DEER2008 Database Definition - EUL v2.zip*[38]

6.3.2.1. NTG Update

To update NTG values, each unique measure name must have a corresponding market sector, market segment, end-use, and program delivery channel:

Market Sector	Nonresidential, Nonresidential – New Construction, Residential, Residential – New Construction
Market Segment	All, Agricultural, Multi-family, Single-family
End-use	All, Appliances, Building Shell, Custom Measures, HVAC, HVAC and Building Shell, HVAC/Water Heating, Lighting, Local Government Partnership, Milk Cooling, Motors, Refrigeration, Retro-commissioning, Water Heating, Whole Building
Program Delivery	All Design Strategies, Building Design Incentive, Custom Incentive, Custom Rebate Based on Performance, Direct Install, Direct Installation, Downstream Prescriptive Rebates, Downstream

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[36] http://www.deeresources.com/deer2008exante/downloads/DEER+NTG+Values+and+Literature+Review+2008-10-10.zip
[37] http://www.deeresources.com/deer2008exante/downloads/EUL+Summary+10-1-08.xls
[38] Provided in Appendix E

Prescriptive Rebate and Direct Install, External Financing, Free Tune-up/Repair, New Innovative Delivery Strategies Designed to Minimize Free Ridership OR Direct Installation for Hard-to-Reach Customers, On-line Audit, On-site Audit, Prescriptive Rebate, Remote Audit via Phone/Mail-In/On-Line or CDROM approach, Retro-commissioning, Turn-in/Recycling, Upstream Prescriptive Rebate, Upstream Prescriptive Rebate - All channels, Various

Once this information is known, a lookup table can be created for each unique measure:

Measure Name	Program
HI EFF CLOTHES WSHER LVL 2=T-3B MEF=1.8 EF=5.5 1.5 2.65 3.5 CF	PGE2000 Res Appliances

In this example, the sector is "residential," the end-use is "appliances," and the unique measure is a "High Efficiency Clothes Washer." By filtering the "Updated DEER NTG Values for 2006-07 final 2008-10-10.xls" file for by these three parameters, the updated NTG value is either 81% or 85%. Since the unique measure name indicates that the "MEF = 1.8", the correct NTG value to update is 81% for Clothes Washer with a Modified Energy Factor > 1.72, as shown below:

				Measure and Program Information			NTG Values and Sources	
Sector	Market Segment	End-Use	Type	Measure Name(s)	Target Market(s)	Program Delivery Method/ Channel	NTG Values Recommended for 2006-07 update	Documentation Reference
Residential	All	Appliances	Incentives	Clothes washer >1.72 MEF	Residential	Prescriptive	81%	Residential Appliances - Chapter 4
Residential	All	Appliances	Incentives	Clothes washer- 15% above DOE standard	Residential	Prescriptive	85%	Residential Appliances - Chapter 4

After NTG values are assigned, a member of the DEER team reviews the lookup table for accuracy. The results of this exercise are then merged with the data in the verification table.

6.3.2.2. EUL Update

To update EUL, each unique measure must have a market sector and end use (for lighting measures, the EUL varies by building type – see Rule 4 below).

Market Sector Residential, Non-Residential

End-use Agriculture, Appliances, Building Envelope, Cooking, HVAC, HVAC – Boilers, HVAC – Chillers, HVAC – Miscellaneous, HVAC – Other Central Plant, HVAC – Split/Package, Indoor Lighting, Miscellaneous, Motors, Office Equipment, Outdoor Lighting, Plug Loads, Process Heating, Refrigeration, Water Heating

Using the same "High Efficiency Clothes Washer" example above, the "EUL+Summary+10-1-08.xls" table can be filtered for the residential appliances to determine that the EUL updated value for this measure should be 11 years:

Market	Enduse	Measure	DEER06-07 Update EUL
Residential	Appliances	High Efficiency Clothes Washer	11

However, not all measures are this straightforward, so the following rules apply when performing this exercise:

Rule 1 Custom Measures:
DEER does not provide EUL values for custom/process measures, therefore ED uses the EUL value from the program tracking databases for custom or process measures.

Rule 2 Rated Life:
DEER requires knowledge of the rated life of a lamp in order to select an EUL value for CFLs. If the rated life cannot be determined from the program tracking database information, ED assumes a rated life of 10,000 hours for the purpose of assigning an EUL value.

Rule 3 Non-DEER Measures:
When the measure cannot be found in DEER, the default is to use the EUL value provided in the utility workpapers. For example a measure called +Pool Pump Reset Agreement+ is part of the verification study but this technology is not included in the DEER update. Therefore, the EUL for this measure defaults back to the workpaper level. If nothing is in the workpaper, the default is to the program tracking data level EUL.

Rule 4 Lighting Measures:
For both residential and nonresidential lighting measures, the EUL varies by building type, and is calculated by the following formula:

EUL = [Rated Life] / [Annual Usage based on building type] or 15 years, whichever is less.

For the "annual usage based on building type," the building types assignments used for applying UES (described below in section 6.3.3. Methodology for Updating UES Values in the VRT ") should be the same building type assignments used for calculating EUL.

After EUL values are assigned, a member of the DEER team reviews the lookup table for accuracy. The results of this exercise are then merged with the data in the verification table.

6.3.3. Methodology for Updating UES Values in the VRT

2008 DEER Update Unit Energy Savings (UES) values for energy, demand, and gas savings were added to the program tracking data for the 13 programs updated in this report. This process was completed by developing a standard-format tracking database for all of the 13 programs – known as the ***Interim Database***. The interim database is a merge of the utility tracking databases with standardized field names and standardized data dictionaries. Development of the interim database was necessary because the utilities' program tracking databases do not use consistent structures, fields, and data definitions across utilities and with DEER. Development of the interim database is described in greater detail in Appendix J.

The main data inputs used to develop the interim database and assign the 2008 DEER Update UES values were:

- Program tracking data for all of the 13 programs, provided by the EM&V contractors evaluating those programs;
- The 2008 DEER database (version 2008.02.04), accessed with an interface program called MISer, both available on the DEER website at www.deeresources.com;
- Zip code to climate zone maps, from the CPUC; and
- NAICS codes tables, from NAICS[39] (to determine building type).

To facilitate the assignment of 2008 DEER Update values, the utilities' program tracking data had to be mapped to the measure properties used in DEER. The 2008 DEER Update format requires the following general information to be known in order to select the correct savings values:

A. DEER Run IDs / DEER Measure IDs ***OR***
B. Building type;
C. Climate zone; and
D. Measure Identification Information (Measure ID)

Once this information is known, the measures can be assigned DEER UES values.

Where this information was available in the program tracking databases, the format may have been converted to be consistent with the DEER structure. Where this information was not available in the program tracking databases, new data fields were created from existing program tracking database data or were assumed.

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[39] http://www.census.gov/eos/www/naics/

Several assumptions had to be made due to insufficient data in the program tracking databases when compared to the level of detail in DEER. For example, information about the base case was not given in the program tracking data.

The assumptions used were:

- All measures were assumed to have a base case of "Customer Average."
- All buildings were assumed to have the average building vintage for the utility.
- Program tracking database cases with the building type "residential multi-family" were not assigned 2008 DEER Update values, as DEER does not currently contain any values for multi-family installations.
- Only measures that are included in the latest version of the 2008 DEER Update were included as possible measures to be mapped. Several measure groups represented in the program tracking database are not yet included in the 2008 DEER Update.
- For line items that could not be assigned a particular DEER Building type based on NAICS code or program tracking database building descriptions, program information was used to either assign a default or a weighed DEER building type.

The tracking data from all utilities was first organized into a single table (see Table 18 for metadata). The table has 1.99 million line items, representing the installation of 106 million measure units. More details are provided in Appendix J.

Table 18: Basic Statistics on the combined program tracking system table

IOU	Count of Lines	Count of Measures	Ex Ante Gross Savings kWh	Ex Ante Gross Savings kW	Ex Ante Gross Savings therms
PGE	671,618	52,448,510	1,727,359,148	280,133	26,460,069
SCE	1,125,937	28,505,508	2,027,724,133	285,436	-
SCG	74,188	12,249,587	2,617,354	1,288	26,052,688
SDGE	118,651	13,215,678	513,433,142	76,576	3,418,018
Total	1,990,394	106,419,282	4,271,133,776	643,432	55,930,774

6.3.3.1. DEER Measure/Run IDs

Some of the tracking data had DEER Run IDs or DEER Measure IDs that facilitated a direct mapping to the 2008 DEER Update values. Table 19 shows the number of line items in the tracking data that had valid DEER Run IDs or valid DEER Measure IDs.

Table 19: Count of DEER Run IDs and DEER Measure IDs in Tracking Data

Utility	Line Items with DEER Run ID	% Of line items with DEER Run ID	Line Items with DEER Measure ID	% of Line Items with DEER Measure ID	Total Line Items
SCE	84,121	8%	-	0%	1,041,774
SCG	60,085	85%	69,675	98%	70,985
SDGE	59,026	50%	59,026	50%	118,651
PGE	-	0%	192,824	29%	671,618
Totals	203,232	11%	321,525	17%	1,903,028

6.3.3.2. Building Type

There are 23 DEER commercial building types used to lookup impact data. The existence of valid building type data varied considerably by program. Therefore, a table was created to map all unique combinations of building type and NAICS code in the program tracking databases to a DEER building type field.

The building type table was created with the following steps:

A. A list of default building types was created for each program according to known characteristics of the program.

B. A map of program tracking database records to DEER building types was created.

C. A map of 4-digit NAICS codes to DEER building types was created.

D. DEER building types were assigned to the program tracking database records according to the following logic:

- The program tracking database building type was used if the program tracking database building type was able to be mapped to a DEER building type.
- The NAICS code derived building type was used if the program tracking database building type was not used, but a valid NAICS value was available.
- If neither the program tracking database building type nor the NAICS code derived building type could be mapped to a DEER building type, then the program based defaults were used.

6.3.3.3. Climate Zone

A climate zone table was created in order to map program tracking database zip codes and climate zones to the list of standard climate zones that are in the 2008 DEER

Update. All unique combinations of zip codes and climate zones that were in the original program tracking database were mapped.

The climate zone table was created with the following steps:

1. Valid zip codes in the program tracking database were reformatted to be numeric values between 90001 and 96162.

2. Valid climate zone values were reformatted to be numeric values between 1 and 16.

3. Default climate zones were created.

4. DEER climate zones were assigned to the program tracking database records using similar logic used as was used for building types.

6.3.3.4. Measure ID

A measure ID table was created in order to map the program tracking database measures to DEER Technology IDs using the measure description, sector, and savings units provided in the program tracking databases. Generally, a measure was mapped if the total gross program tracking database savings associated with the unique measure description constituted greater than 1% of the total portfolio savings.

If the program tracking database measure description was adequately descriptive, the measure was mapped to a DEER Technology ID. Program tracking database savings unit definitions were converted to be consistent with the unit definitions in DEER.[40]

6.3.3.5. Interim Database Results - Assigning DEER UES Values

The DEER MISer tool was used to extract essential data on all measures from the 2008 DEER Update. This data was then formatted into a table containing the essential fields needed to match tracking data line items to DEER to be used to look up UES values.

Due to the high level of data complexity, as well as the large number of line items and table relationships, the entire Interim Database, including all lookup tables and additional code, was modeled using SAS software. The Interim Database was updated to include 2008 DEER Update non-interactive savings values for the targeted measures. Wherever a match between program tracking data and DEER was possible, the new value was added into the VRT data field labeled *EDDEERExanteGrUnitUESav* (kWh, kW and therms).

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[40] For example, DEER reports annual savings for furnace as +Therms/ kBtuh+, whereas program tracking data reports annualsavings as +per furnace+. In case of a 72 kBtuh furnace, a multiplier of 72 was applied to the DEER per unit savings figure to resolvethis difference in units. No change was made to the program tracking data, only DEER per unit savings were adjusted when necessary to match tracking data units.

For the Final Energy Division Verification Report, three sets of Interim Databases were created:

1. Interim DB using non-interactive (end use) DEER 06-07 UES numbers
2. Interim DB using interactive (whole building) DEER 06-07 UES numbers
3. Interim DB using interactive (whole building) DEER 06-07 UES numbers, but eliminating any negative therm interactive effects

A summary of the results of the UES assignment for each of the above datasets is presented in Table 20.

Table 20: Change in Savings due to UES Update by Program

	Interactive Positive		
Program	Change in kWh	Change in kW	Change in Therms
PGE2000	91,535,507	65,376	-
PGE2004	-	-	-
PGE2080	-31,562,981	11,870	-
SCE2500	-68,969,172	-9,653	-
SCE2501	-42,188,534	69,523	-
SCE2502	-	-	-
SCE2511	-51,020,571	-3,906	-
SCE2517	-12,425,428	-1,632	-
SCG3507	-	-	-
SCG3510	-	-	-
SCG3513	-	-	-
SCG3517	-	-	9,555
SDGE3010	-	-	-
SDGE3012	-3,073,324	-324	-
SDGE3016	-26,602,086	11,016	-
SDGE3017	-	-	-
SDGE3020	-11,193,863	-101	-
SDGE3024	-	-	21,570
SDGE3025	-	-	-
SDGE3028	-20,558,619	-1,852	-
SDGE3035	52,912	222	-52,482
Total Portfolio	-3.12%	15.74%	-0.04%

	Interactive		
Program	Change in kWh	Change in kW	Change in Therms
PGE2000	91,535,507	65,376	-29,491,381

PGE2004	-	-	-
PGE2080	-31,562,981	11,870	-4,477,221
SCE2500	-68,969,172	-9,653	-3,139,327
SCE2501	-42,188,534	69,523	-20,114,574
SCE2502	-	-	-
SCE2511	-51,020,571	-3,906	-810,994
SCE2517	-12,425,428	-1,632	-469,062
SCG3507	-	-	-
SCG3510	-	-	-
SCG3513	-	-	-
SCG3517	-	-	9,555
SDGE3010	-	-	-
SDGE3012	-3,073,324	-324	-35,693
SDGE3016	-26,602,086	11,016	-3,740,858
SDGE3017	-	-	-
SDGE3020	-11,193,863	-101	-231,343
SDGE3024	-	-	21,570
SDGE3025	-	-	-
SDGE3028	-20,558,619	-1,852	-529,293
SDGE3035	52,912	222	-55,002
Total Portfolio	-3.12%	15.74%	-106.89%

	Non Interactive		
Program	Change in kWh	Change in kW	Change in Therms
PGE2000	11,491,453	-16,632	-
PGE2004	-	-	-
PGE2080	-117,222,214	-16,027	-
SCE2500	-82,812,988	-19,837	-
SCE2501	-191,003,215	-22,314	-
SCE2502	-	-	-
SCE2511	-72,700,957	-10,774	-
SCE2517	-21,872,006	-4,855	-
SCG3507	-	-	-
SCG3510	-	-	-
SCG3513	-	-	-
SCG3517	-	-	9,555
SDGE3010	-	-	-
SDGE3012	-4,026,927	-648	-
SDGE3016	-38,869,953	-2,081	-
SDGE3017	-	-	-
SDGE3020	-18,336,242	-2,489	-
SDGE3024	-	-	21,570
SDGE3025	-	-	-

SDGE3028	-22,456,467	-3,727	-
SDGE3035	31,646	210	-52,482
Total Portfolio	-9.89%	-11.11%	-0.04%

Full details of the changes in savings for each measure ID by program are provided in Appendix J. Revised statistics are provided in Appendix O.

6.4. Running the VRT to Calculate Adjusted Energy Savings and PEB Values

Once the verification table is populated with updated parameters, the VRT has the capability to calculate kWh, kW, and therm savings and TRC and PAC net benefits under two scenarios:

Scenario 1 – Utility installation counts, UES, NTG, and EUL values are unadjusted

Scenario 2 – Adjustments made to utility installation count, UES, NTG, and EUL values

6.4.1. Scenario 1 – Utility Installation Counts, UES, NTG, and EUL Values are Unadjusted

The VRT can produce kWh, kW, and therm savings and TRC and PAC net benefit values under Scenario 1 with two options that should produce similar results:

Option 0 – Utility calculated program level savings and net benefits from the E3 spreadsheet are simply added up
Option 1 – Utility measure level program level savings and net benefits from the E3 spreadsheet are recalculated using the VRT

The purpose of running Option 0 and Option 1 together is to compare the VRT calculation results to the utilities' program level calculations to confirm that the VRT is performing the calculation correctly.

By running the VRT with Option 0, the utility calculated kWh, kW, and therm savings and TRC and PAC net benefits from their E3 spreadsheet are simply aggregated across all programs. There is no re-calculation of the numbers filed by the utilities. The results from running the VRT using Option 0 are shown below in Table 21:

Table 21: VRT Ran with Option 0

	PG&E	SCE	SDGE	SoCalGas
EE Portfolio Savings (adjusted ex-ante)		P+ 2006-2007		
Total Cumulative Savings (GWH)	2,247.9	2,291.4	546.9	0.0
Total Peak Savings (MW)	394.6	366.5	97.7	0.0
Total Cumulative Natural Gas Savings (MMTh)	28.9	0.0	4.2	36.4
PEB				
TRC Net Benefits	+ 849,935,066	+ 709,463,836	+ 239,563,872	+ 104,605,049
PAC Net Benefits	+ 1,004,782,871	+ 947,224,920	+ 294,519,698	+ 171,649,181

Running the VRT with Option 1 recalculates kWh, kW, and therm savings and TRC and PAC net benefits using the utility reported measures in the E3 spreadsheets with none of the values updated or adjusted in any way. The results from running the VRT using Option 1 are shown below in Table 22:

Table 22: VRT Ran with Option 1

	PG&E	SCE	SDGE	SoCalGas
EE Portfolio Savings (adjusted ex-ante)		P+ 2006-2007		
Total Cumulative Savings (GWH)	2,247.9	2,288.7	546.9	0.0
Total Peak Savings (MW)	394.6	366.5	97.7	0.0
Total Cumulative Natural Gas Savings (MMTh)	28.9	0.0	4.2	36.4
PEB				
TRC Net Benefits	+ 850,910,871	+ 709,480,632	+ 239,563,872	+ 104,605,049
PAC Net Benefits	+ 1,005,758,675	+ 947,224,920	+ 294,519,698	+ 171,649,181

Table 23 shows the percentage difference between the results from Table 21 compared to the results from Table 22:

Table 23: Percentage Difference = [Option 1 - Option 0] / [Option 0]

	PG&E	SCE	SDGE	SoCalGas
EE Portfolio Savings (adjusted ex-ante)		P+ 2006-2007		
Total Cumulative Savings (GWH)	0.00%	-0.12%	0.00%	
Total Peak Savings (MW)	0.00%	0.00%	0.00%	
Total Cumulative Natural Gas Savings (MMTh)	0.00%		0.00%	0.00%
PEB				
TRC Net Benefits	0.11%	0.00%	0.00%	0.00%
PAC Net Benefits	0.10%	0.00%	0.00%	0.00%

The VRT thus was able to reproduce the utilities' own calculations for kWh, kW, and therms exactly for PGE, SDGE, and SCG, and SCE demand. The calculations were off by -.12% for SCE kWh savings.

Similarly, the VRT was able to reproduce the exact calculations for TRC and PAC net benefits for SCE, SDGE, and SCG. The calculations were off for PGE by a fraction of a percent (.11% for TRC and .10% for PAC).

6.4.2. Scenario 2 – Adjustments Made To Utility Installation Count, UES, NTG, and EUL Values

The VRT can produce kWh, kW, and therm savings and TRC and PAC net benefit values under Scenario 2 through two options:

Option 2 – Updates to installation rates, UES, NTG, and EUL were made to measures at the E3 spreadsheet level
Option 3 – Updates to installation rates, UES, NTG, and EUL were made to measures at the program tracking database level

Of the 13 programs updated, 12 used Option 3 and only one (PGE2004) used Option 2. When running the VRT to calculate the adjusted kWh, kW, and therm savings and adjusted TRC and PAC net benefits, Option 2 and 3 are automatically combined.

For the Final Verification Report, the results of Scenario 2 are provided using three different sets of data:

With Positive Interactive Effects Only
With Both Positive and Negative Interactive Effects
Without Interactive Effects

Table 24 shows the results of running the VRT using the combined output from Options 2 & 3 with Positive Interactive Effects Only:

Table 24: VRT Ran with combined Option 2&3 with Positive Interactive Effects Only

	PG&E	SCE	SDGE	SoCalGas
EE Portfolio Savings (adjusted ex-ante)		P+ 2006-2007		
Total Cumulative Savings (GWH)	2,483.94	3,199.20	751.85	0.00
Total Peak Savings (MW)	509.61	593.73	152.65	0.00
Total Cumulative Natural Gas Savings (MMTh)	46.77	0.00	8.93	43.85
PEB				
TRC Net Benefits	+ 391,448,750	+ 384,950,588	+ 132,235,032	+ 29,338,212
PAC Net Benefits	+ 512,502,401	+ 603,788,835	+ 178,594,993	+ 89,338,576

Table 25 below compares the results from the combined Options 2 and 3 to the results from Option 1 and shows the percentage differences:

Table 25: Percentage Difference (with Positive Interactive Effects Only) = [Option 2&3 - Option 1] / [Option 1]

	PG&E	SCE	SDGE	SoCalGas
EE Portfolio Savings (adjusted ex-ante)		P+ 2006-2007		
Total Cumulative Savings (GWH)	-27.56%	-18.74%	-18.89%	
Total Peak Savings (MW)	-21.77%	-11.69%	-8.51%	
Total Cumulative Natural Gas Savings (MMTh)	-14.06%		-9.93%	-18.89%
PEB				
TRC Net Benefits	-54.00%	-45.67%	-44.80%	-71.95%
PAC Net Benefits	-49.04%	-36.19%	-39.36%	-47.95%

Table 26 shows the results of running the VRT using the combined output from Options 2 & 3 with both Positive and Negative Interactive Effects:

Table 26: VRT Ran with combined Option 2&3 with Both Positive and Negative Interactive Effects

	PG&E	SCE	SDGE	SoCalGas
EE Portfolio Savings (adjusted ex-ante)		P+ 2006-2007		
Total Cumulative Savings (GWH)	2,483.94	3,199.20	751.85	0.00
Total Peak Savings (MW)	509.61	593.73	152.65	0.00
Total Cumulative Natural Gas Savings (MMTh)	34.75	0.00	7.16	43.85
PEB				
TRC Net Benefits	+ 338,308,722	+ 346,991,860	+ 122,152,531	+ 29,338,212
PAC Net Benefits	+ 459,362,373	+ 565,830,107	+ 168,512,492	+ 89,338,576

Table 27 below compares the results from the combined Options 2 and 3 with both Positive and Negative Interactive Effects to the results from Option 1 and shows the percentage differences:

Table 27: Percentage Difference (with Both Positive and Negative Interactive Effects) = [Option 2&3 - Option 1] / [Option 1]

	PG&E	SCE	SDGE	SoCalGas
EE Portfolio Savings (adjusted ex-ante)		P+ 2006-2007		
Total Cumulative Savings (GWH)	-27.56%	-18.74%	-18.89%	
Total Peak Savings (MW)	-21.77%	-11.69%	-8.51%	
Total Cumulative Natural Gas Savings (MMTh)	-36.15%		-27.75%	-18.89%
PEB				
TRC Net Benefits	-60.24%	-51.03%	-49.01%	-71.95%
PAC Net Benefits	-54.33%	-40.20%	-42.78%	-47.95%

Table 28 shows the results of running the VRT using the combined output from Options 2 & 3 without Interactive Effects:

Table 28: VRT Ran with combined Option 2&3 without Interactive Effects

	PG&E	SCE	SDGE	SoCalGas
EE Portfolio Savings (adjusted ex-ante)		P+ 2006-2007		
Total Cumulative Savings (GWH)	2,430.18	3,085.76	750.22	0.00
Total Peak Savings (MW)	471.67	547.90	146.77	0.00
Total Cumulative Natural Gas Savings (MMTh)	46.77	0.00	9.10	43.85
PEB				
TRC Net Benefits	+ 371,346,746	+ 319,491,827	+ 131,994,937	+ 29,338,212
PAC Net Benefits	+ 492,400,397	+ 538,330,073	+ 179,017,709	+ 89,338,576

Table 29 below compares the results from the combined Options 2 and 3 without Interactive Effects to the results from Option 1 and shows the percentage differences:

Table 29: Percentage Difference (without Interactive Effects) = [Option 2&3 - Option 1] / [Option 1]

	PG&E	SCE	SDGE	SoCalGas
EE Portfolio Savings (adjusted ex-ante)		P+ 2006-2007		
Total Cumulative Savings (GWH)	-29.13%	-21.62%	-19.06%	
Total Peak Savings (MW)	-27.60%	-18.51%	-12.04%	
Total Cumulative Natural Gas Savings (MMTh)	-14.06%		-8.21%	-18.89%
PEB				
TRC Net Benefits	-56.36%	-54.91%	-44.90%	-71.95%
PAC Net Benefits	-51.04%	-43.11%	-39.22%	-47.95%

Refer to the VRT user's manual in Appendix F for instructions for producing results comparing the combined Option 2 and 3 to Option 1 for each individual program.

The values in Table 24 – Table 29 are entered into the RRIM Calculator together with the savings from the other program efforts described in section 4.1.1 to determine the appropriate earnings rate and calculate whether the utility will receive shareholder incentives or incur a penalty.

6.5. 2006 – 2007 Exceptions and Assumptions

6.5.1. Building Types

Knowledge of a measure's building type is required for assigning new UES values from DEER. ED assigned the building type "Single+Family+Residential" to all residential measures.

6.5.2. Nonresidential CFL hours of operation

For CFL measures, hours of use information is necessary for both EUL and UES updates. There are two methodologies used by the utilities to estimate hours of use:

1. Use all building types and take a straight average hours of use
2. Use a weighted average of the three most common building types

We opted for methodology +2, since it provides a more realistic estimate of the hours of use; specifically, we applied an equal 1/3 weighting to the following three non-residential building types: small office, retail, and sit-down restaurants.

6.5.3. DEER EUL and Rated Life

The EUL for CFLs is based on [rated life]/[annual hours of use]; if the rated life is not known, we gave the utilities the benefit of doubt and assumed a rated life of 10,000 hours. The range is between 6,000 and 12,000 hours. CFLs with a 12,000 hour rated life are rare, and utility workpapers show estimates of 9,200 hours. We believe the typical case in the current program environment is around 10,000 hours.

6.5.4. SPC Realization Rate for Custom Projects

DEER does not provide UES for custom or "process" measures. Rather than simply passing these values through as reported by the utilities, we applied a standard realization rate for custom/process measures based on a recently completed program evaluation study.[41] "The 2004-2005 Statewide Nonresidential Standard Performance Contract Program Measurement and Evaluation Study"[42] managed by SCE found a statewide gross realization rate of .79 for custom/process measures. The utility specific realization rates reported in the study vary, from .82 for kWh for PGE, to .77 for kWh for SCE, to .94 for kWh for SDGE, with no realization rate provided for SCG. The closest realization rate we found for SCG was from the "Evaluation of the Southern California Gas Company 2004-05 Non-Residential Financial Incentives Program,"[43] which found a realization rate of .75 for therms for SCG. It should be noted that the individual utility sample sizes in the SPC study are small, with anomalies for each utility sample. However, in the interest of providing a judicious representation of realized savings, we decided to apply a statewide realization rate of .79 for electric, demand, and natural gas savings across all utilities for measure that are custom/process type measures rather than passing the reported value through unmodified.

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[41] ED is given discretion to use recently completed evaluation studies to update ex-ante estimates per Ordering Paragraph 3c of Decision 08-01-042.

[42] Completed on September 30th, 2008 by SCE. Available at www.calmac.org.

[43] Completed on June 7th, 2006 by SoCalGas. Available at www.calmac.org.

6.5.5. SCE Quarterly Installation Count

ED found that SCE does not report actual installation counts per quarter in the E3 calculator; instead, SCE provides annual counts, and the quarterly counts are calculated by taking the annual installation counts and dividing by four. The other utilities provide actual installation counts by quarter. Quarterly installation counts support a more accurate calculation of the PEB because the avoided costs are calculated on net present value and installations tend to peak towards the end of the year. SCE's assumption that installations are spread evenly throughout the year were considered incorrect. In order to correct this assumption in the VRT, the following rules were applied:

The quantity for a given record in a given program tracking database was allocated to one of eight quarters based on the record's *EDUpdatedPaidandInstalledDate*. There were two rules regarding the *EDUpdatedPaidandInstalledDate* depending on whether it was an upstream or downstream program:

Rule #1: For downstream programs, for each record, the value for *EDUpdatedPaidandInstalledDate* was set to the *IOUPrgTrkPaidDate,* which represents the date the rebate check was prepared. There was only one exception where this could not be done, SCE2501. This small program did not have a month-year date value but only a year value (2007). For this program, the quantity was divided by four and spread evenly across the four quarters of 2007.

Rule #2: For upstream programs, the value for *EDUpdatedPaidandInstalledDate* was set to the *IOUPrgTrkPaidDate,* which represents the date that the payment to the manufacturer was authorized. For upstream measures, customer installations were assumed to occur within the same quarter that the payment to the manufacturer was authorized, i.e., there was no assumed lag between the date on which the payment to the manufacturer was authorized and the date on which the customer installed the measure.

6.5.6. Residential / Nonresidential Split Assumption for CFLs

In the workpaper entitled "Integral (Screw-In) Compact Fluorescent Lamp (CFL) Non-Residential" (WPSCRELG0022, Revision 0, dated December 18 2007),[44] SCE assumes that 90% of the upstream CFLs are installed in residential buildings and 10% are installed in nonresidential buildings, citing an analysis of 1994 consumer mail-in survey data (manufacturer bounce back cards).[45] PG&E uses the same 90%/10% installation split, but has not provided a workpaper to Energy Division to support this assumption. PG&E estimated that 100% of the upstream lighting products would go into residential

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[44] Provided in Appendix K
[45] Provided in Appendix M

buildings when the program was approved, but did not expressly notify Energy Division of the change to the 90%/10% residential/nonresidential split assumption. SDG&E, which implements essentially the same upstream lighting program, assumes that 100% of the upstream CFLs are installed in residential buildings.

Energy Division cannot validate the 90%/10% installation split assumption at this time for upstream CFLs sold for the following reasons:

A. There are likely to be significant differences between the 1994 programs, lighting products, and purchasing patterns compared to 2006-2007.

B. The extent to which the 1994 consumer mail-in survey data contains possible self-selection bias is not known.

C. Whether or not the 1994 consumer mail-in survey data were drawn from a random and representative sample of customers cannot be ascertained.

D. Customer survey data collected between 2004 and 2007[46] as part of the upstream lighting program evaluations suggest that the proportion of commercial customer purchases is likely to be between 3% and 7%.

E. Preliminary data from 06-07 in-store intercept surveys[47] suggest that the volume of CFL purchased by nonresidential customers from retail channels is about 2%, but the data do not appear representative and conclusive at this time.

F. Surveys of recipients of CFLs given away at the events organized by IOUs in 2006-2007 show that 1–2% of CFLs given away are installed in nonresidential premises.[48]

G. The number of commercial building sockets which can receive CFLs (data available from the Commercial End Use Survey database) combined with the fraction of likely upstream commercial purchasers (in D above) does not appear to support more than 2-5% of the 2006-2007 upstream CFLs volume (>50,000,000 bulbs) being installed in non-residential buildings.

The data sources mentioned above strongly suggest that nonresidential installations of CFLs sold through upstream programs is far less than the 10% that PG&E and SCE have assumed. ED has therefore calculated kWh, kW and PEB for SCE and PG&E assuming that 5% of upstream CFL products, rather than 10%, are installed in non-residential buildings. SDGE's assumption that 100% of upstream CFL products are installed in residential buildings is unchanged.

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[46] Personal communication KEMA staff to Tim Drew of Energy Division October 28, 2008

[47] Personal communication KEMA staff to Tim Drew of Energy Division October 28, 2008

[48] See Appendix A5

6.5.7. Handling of Audit Impacts

No adjustments were made to savings claimed as a result of audit programs.

6.5.8. Use of HVAC Interactive Effects

The interior building load reduction/increase due to a measure installation in a facility can interact with the heating, ventilating and air-conditioning (HVAC) system, resulting in changes in the consumption of electricity or gas. These HVAC interactive effects can result in positive or negative changes in consumption, and can cross fuel types and energy/demand categories. This raises the general issue of how these interactions affect the total savings for the project, and thus the program. A second database in DEER calculates a separate total UES savings that includes HVAC interactive effects.

In comments during the Energy Division workshops and meetings, the utilities put forward arguments in favor of residential lighting and appliances not including any negative "interactive effects," but keeping positive "interactive effects" for non-residential measures.

SCE has been claiming no positive or negative interactive effects for CFLs in residential and non-residential settings. PGE and Sempra claim positive interactive effects for CFLs in non-residential settings, but they are not claiming negative interactive effects for those installations. In lieu of a specific Commission policy on the use of HVAC interactive effects, Energy Division decided to run three scenarios based on 1) DEER UES values *with only positive* HVAC interactive effects, 2) DEER UES values *with all* HVAC interactive effects, and 3) DEER UES values *without any* HVAC interactive effects

6.5.9. RCA and DTS UES Assumptions

DEER provides multiple base case gross savings values for measures such as duct sealing and refrigerant charge and airflow. In determining which of these values to use when assigning a UES, Energy Division decided to select the "typical" value in DEER rather than calculating a value based on a combination of the typical and "high" case values.

7. Calculation of Shareholder Incentives

Energy Division developed a spreadsheet tool, the RRIM Calculator, to calculate the earnings or penalties for each utility using GWh, MW, and MMTh accomplishments and TRC & PAC net benefits from the VRT output and the savings from the other program efforts described in section 4.1.1. The RRIM Calculator is designed to calculate and track the 2006-2007 and 2008 interim incentives as well as the final three year cycle true-up.

7.1. Walk Through RRIM Calculator

The narrative below describes the purpose, method, and source data for each step of the calculation for the first interim claim only. Example formulas are taken from column C of the RRIM Calculator. The RRIM is provide as part of Appendix G.

Savings Goals

Location on Spreadsheet:
Rows 8-10.

Description:
The CPUC adopted GWh, MW, and MMTh savings goals for 2007. The goals for GWh and MMTh are cumulative as describe in section 6.3.1 of Decision 07-10-032.

Source of Data:
Decision 04-09-060, Attachment 9.

MPS Goals (80% of goal)

Location on Spreadsheet:
Rows 13-15.

Description:
For each individual metric, the point above which the IOUs can claim earnings based on the PEB.

Source of Data:
Calculated from Savings Goals

Dead Band (65% of goal)

Location on Spreadsheet:
Rows 18-20.

Description:
For each individual metric, the point above which the IOUs are not liable for payment of penalties.

Source of Data:
Calculated from Savings Goals

Functional Role in Spreadsheet:
Used to calculate the amount of penalties if penalties must be paid.

EE Portfolio Savings (adjusted ex-ante)

Location on Spreadsheet:
Rows 24-26.

Description:
The GWh, MW, and MMTh accomplishments for 2006 and 2007 EE programs.

Source of Data:
Sum of Annual Net kWh, Sum of Net Jul-Sept Pk (kW), and Sum of Annual Net Therms from the Output sheets of the E3 calculator output files produced by the VRT.

Functional Role in Spreadsheet:
A component of what is used to determine the percentage of the adopted goal that was achieved.

50% C&S Savings (adjusted ex-ante)

Location on Spreadsheet:
Rows 29-31.

Description:
The estimated GWh, MW, and MMTh accomplishments associated with the utilities' codes and standards advocacy work.

Source of Data:
Tables 3-5 in the *Statewide Utility Codes and Standards Program Interim Verification Report*

Functional Role in Spreadsheet:
A component of what is used to determine the percentage of the adopted goal that was achieved.

04-05 EM&V Adjusted EE Portfolio Savings

Location on Spreadsheet:
Rows 34-36.

Description:
The GWh, MW, and MMTh accomplishments for 2004 and 2005 EE programs. Ex-post numbers are used where available.

Source of Data:
A mix of program level ex-post results, as reported in final 2004-2005 program evaluation reports, and 2004-2005 IOU reported accomplishments where ex-post results are not available.

Functional Role in Spreadsheet:
A component of what is used to determine the percentage of the adopted goal that was achieved.

EM&V Adjusted LIEE Savings

Location on Spreadsheet:
Rows 39-41.

Description:
The GWh, MW, and MMTh accomplishments for 2004 through 2007 LIEE programs. The savings data for the 2005 LIEE program come directly from the final 2005 LIEE Impact Evaluation completed in December 2007. Savings for 2006 and 2007 have not been adjusted to be consistent with the findings of the 2005 LIEE Impact Evaluation. Savings data for 2004 are directly from the IOUs' 2004 LIEE Annual Report.

Source of Data:
A mix of program level ex-post results, as reported in final 2005 LIEE program evaluation report; 2004, 2006, and 2007 IOU reported accomplishments; and extrapolations of demand savings for 2004 and 2005.

Functional Role in Spreadsheet:
A component of what is used to determine the percentage of the adopted goal that was achieved.

Total Savings

Location on Spreadsheet:
Rows 44-46.

Description:
The sum of the GWh, MW, and MMTh accomplishments for EE Portfolio Savings, 50% C&S Savings, 04-05 EM&V Adjusted EE Portfolio Savings, and EM&V Adjusted LIEE Savings.

Functional Role in Spreadsheet:
Used to determine what percentage of the adopted goal was achieved.

MPS Individual Metric Performance

Location on Spreadsheet:
Rows 49-51.

Description:
The percentage of the individual adopted GWh, MW, and MMTh goals that are deemed accomplished.

Functional Role in Spreadsheet:
Used to determine what percentage of the adopted goal was achieved for each individual metric (GWh, MW, and MMTh).

MPS Average Metric Performance

Location on Spreadsheet:
Row 52.

Description:
The percentage of the average adopted GWh, MW, and MMTh goals that are deemed accomplished.

Functional Role in Spreadsheet:
Used to determine what percentage of the adopted metric goal was achieved on average.

TRC Net Benefits and PAC Net Benefits

Location on Spreadsheet:
Rows 55-56.

Description:
The Total Resource Cost and Program Administrator Cost avoided cost net benefits.

Source of Data:
Benefit – Cost NPV for Program TRC (+) and Program PAC (+) from the Output sheets of the E3 calculator output files produced by the VRT.

Functional Role in Spreadsheet:
Components of what is used to determine the Performance Earnings Basis for each IOU.

PEB

Location on Spreadsheet:
Row 57.

Description:
The Performance Earnings Basis. The metric adopted for measuring program performance. The metric is ((2/3)*(TRC net benefits))+((1/3)*(PAC net benefits)).

Functional Role in Spreadsheet:
Used as a basis for determining the amount of IOU earnings or penalties.

PEB at MPS Threshold

Location on Spreadsheet:
Row 58.

Description:
The Performance Earnings Basis, adjusted to accommodate the rules established for meeting the MPS threshold. The result is zero if the metric average or any of the individual metrics are below the adopted thresholds.

Functional Role in Spreadsheet:
Used as a basis for determining the amount of IOU earnings or penalties.

Function of Excel Formulas:
=IF(AND(C52>=0.85,C49>=0.8,C50>=0.8,C51>=0.8),C57,0)
This formula sets the cell equal to the PEB if the thresholds for the metric average and the individual metrics are greater than or equal to the adopted thresholds. If this condition is not met, the cell will equal zero.

Earnings/Penalty Cap

Location on Spreadsheet:
Row 60.

Description:
The three year earnings/penalties caps for each IOU adopted in D. 07-09-043.

Functional Role in Spreadsheet:
Used to cap the total earnings.

Earnings Rate

Location on Spreadsheet:
Row 62.

Description:
The rate at which the IOU may earn on the PEB.

Functional Role in Spreadsheet:
Used to determine the earnings rate.

Function of Excel Formulas:
=IF(AND(C52>=0.85,C52<1,C58>0),0.09,(IF(OR(C58=0,C52<0.85),0,(IF(AND(C49>=0.95,C50>=0.95,C51>=0.95,C52>=1),0.12,0.09)))))
This formula sets the cell to 9% if the metric average is equal to or greater than 85%, and all of the individual metrics are equal to or greater than 80% of the Commission-adopted savings goals. The cell is set to 12% if the metric average is equal to or greater than 100%, and all of the individual metrics are equal to or greater than 95% of the Commission-adopted savings goals. If neither of these conditions is met, the cell will be equal to zero.

Total Earnings

Location on Spreadsheet:
Row 64.

Description:
The total individual earnings that may be claimed by each utility.

Explanation of Formulas:
=MINA(C62*C58*0.65,C60)
This formula sets the cell to equal the Earnings Rate times the PEB at MPS Threshold, or the Earnings/Penalty Cap, whichever is lower.

Penalties

Location on Spreadsheet:
Row 66.

Description:
After all the required data are entered into the spreadsheet, the cell will be equal to "+es" if penalties are required.

Functional Role in Spreadsheet:
To indicate whether or not penalties are required for the utility and, if so, cause the spreadsheet to calculate penalties.

Explanation of Formulas:
=IF(SUM(C44:C46)>0,(IF(OR(C55<0,C49<=0.65,C50<=0.65,C51<=0.65),++ES+,+NO+)),0)
This formula sets the cell to "+ES" if there are negative TRC net benefits or if any of the individual metrics are equal to or below 65%.

Total Penalties

Location on Spreadsheet:
Row 68.

Description:
The total individual penalties that should be assessed to each utility.

Explanation of Formulas:
The formulas were deleted since no penalties were required.

7.2. Conclusions

The results of the RRIM calculation are provided in Tables 30 - 32. Based on the results of the analysis described in this report PG&E, SCE, and SDG&E are not eligible for an interim EE shareholder earnings payment for program years 2006-2007, and SoCalGas is eligible for an interim EE shareholder earnings payment of +2,886,293 .

Table 30: RRIM Calculator Output with Positive Interactive Effects Only

	First Earnings Claim (PY2006-2007)				
	PG&E	SCE	SDGE	SoCalGas	Total
Savings Goals		PY 2004-2007			
Total Cumulative Savings (GWH)	3,260.0	3,621.0	1,102.4	0.0	**7,983.40**
Total Peak Savings (MW)	708.0	760.0	209.5	0.0	**1,677.50**
Total Cumulative Natural Gas Savings (MMTh)	47.0	0.0	9.5	53.3	**109.80**
MPS Goals (80% of goal)					
Total Cumulative Savings (GWH)	2,608.0	2,896.8	881.9	0.0	**6,386.72**
Total Peak Savings (MW)	566.4	608.0	167.6	0.0	**1,342.00**
Total Cumulative Natural Gas Savings (MMTh)	37.6	0.0	7.6	42.6	**87.84**
Dead Band (65% of goal)					
Total Cumulative Savings (GWH)	2,119.0	2,353.7	716.6	0.0	**5,189.21**
Total Peak Savings (MW)	460.2	494.0	136.2	0.0	**1,090.38**
Total Cumulative Natural Gas Savings (MMTh)	30.6	0.0	6.2	34.6	**71.37**
Achieved Savings Towards MPS					
EE Portfolio Savings (adjusted ex-ante)		PY 2006-2007			
Total Cumulative Savings (GWH)	1,303.1	1,550.8	371.8		**3,225.65**
Total Peak Savings (MW)	252.8	287.9	83.5		**624.12**
Total Cumulative Natural Gas Savings (MMTh)	21.3		3.3	26.2	**50.69**
50% C&S Savings (adjusted ex-ante)		PY 2006-2007			
Total Cumulative Savings (GWH)	69.2	69.3	16.2		**154.70**
Total Peak Savings (MW)	19.8	18.7	4.7		**43.20**
Total Cumulative Natural Gas Savings (MMTh)	1.9		0.2	3.1	**5.20**
04-05 EM&V Adjusted EE Portfolio Savings					
Total Cumulative Savings (GWH)	1,011.4	1,497.9	342.6		**2,851.90**
Total Peak Savings (MW)	216.9	270.5	59.3		**546.66**
Total Cumulative Natural Gas Savings (MMTh)	19.1		4.5	11.1	**34.71**
EM&V Adjusted LIEE Savings		PY 2004-2007			
Total Cumulative Savings (GWH)	100.3	81.2	21.3		**202.74**
Total Peak Savings (MW)	20.1	16.6	5.2		**42.01**
Total Cumulative Natural Gas Savings (MMTh)	4.6		0.9	3.5	**8.95**
Total Savings		PY 2004-2007			
Total Cumulative Savings (GWH)	2,483.9	3,199.2	751.8	0.0	**6,434.99**
Total Peak Savings (MW)	509.6	593.7	152.7	0.0	**1,255.99**
Total Cumulative Natural Gas Savings (MMTh)	46.8	0.0	8.9	43.8	**99.55**
MPS Individual Metric Performance					
Percent of GWH Goal	76%	88%	68%	0%	81%
Percent of MW Goal	72%	78%	73%	0%	75%
Percent of MMTh Goal	100%	0%	94%	82%	91%
MPS Average Metric Performance	**83%**	**83%**	**78%**	**82%**	**82%**
PEB					
TRC Net Benefits	$ 391,448,750	$ 384,950,588	$ 132,235,032	$ 29,338,212	$ 937,972,582
PAC Net Benefits	$ 512,502,401	$ 603,788,835	$ 178,594,993	$ 89,338,576	$ 1,384,224,805
PEB	$ 431,799,967	$ 457,896,670	$ 147,688,352	$ 49,338,334	$ 1,086,723,323
PEB at MPS Threshold	**$ -**	**$ -**	**$ -**	**$ 49,338,334**	**$ 49,338,334**
Earnings/Penalty Cap	$ 180,000,000	$ 200,000,000	$ 50,000,000	$ 20,000,000	$ 450,000,000
Earnings Rate	**0%**	**0%**	**0%**	**9%**	
Total Earnings	$ -	$ -	$ -	$ 2,886,293	$ 2,886,293
Penalties	NO	NO	NO	NO	
Total Penalties					$ -

Table 31: RRIM Calculator Output with Positive and Negative Interactive Effects

	First Earnings Claim (PY2006-2007)				
	PG&E	SCE	SDGE	SoCalGas	Total
Savings Goals		PY 2004-2007			
Total Cumulative Savings (GWH)	3,260.0	3,621.0	1,102.4	0.0	**7,983.40**
Total Peak Savings (MW)	708.0	760.0	209.5	0.0	**1,677.50**
Total Cumulative Natural Gas Savings (MMTh)	47.0	0.0	9.5	53.3	**109.80**
MPS Goals (80% of goal)					
Total Cumulative Savings (GWH)	2,608.0	2,896.8	881.9	0.0	**6,386.72**
Total Peak Savings (MW)	566.4	608.0	167.6	0.0	**1,342.00**
Total Cumulative Natural Gas Savings (MMTh)	37.6	0.0	7.6	42.6	**87.84**
Dead Band (65% of goal)					
Total Cumulative Savings (GWH)	2,119.0	2,353.7	716.6	0.0	**5,189.21**
Total Peak Savings (MW)	460.2	494.0	136.2	0.0	**1,090.38**
Total Cumulative Natural Gas Savings (MMTh)	30.6	0.0	6.2	34.6	**71.37**
Achieved Savings Towards MPS					
EE Portfolio Savings (adjusted ex-ante)		PY 2006-2007			
Total Cumulative Savings (GWH)	1,303.1	1,550.8	371.8		**3,225.65**
Total Peak Savings (MW)	252.8	287.9	83.5		**624.12**
Total Cumulative Natural Gas Savings (MMTh)	9.2		1.5	26.2	**36.90**
50% C&S Savings (adjusted ex-ante)		PY 2006-2007			
Total Cumulative Savings (GWH)	69.2	69.3	16.2		**154.70**
Total Peak Savings (MW)	19.8	18.7	4.7		**43.20**
Total Cumulative Natural Gas Savings (MMTh)	1.9		0.2	3.1	**5.20**
04-05 EM&V Adjusted EE Portfolio Savings					
Total Cumulative Savings (GWH)	1,011.4	1,497.9	342.6		**2,851.90**
Total Peak Savings (MW)	216.9	270.5	59.3		**546.66**
Total Cumulative Natural Gas Savings (MMTh)	19.1		4.5	11.1	**34.71**
EM&V Adjusted LIEE Savings		PY 2004-2007			
Total Cumulative Savings (GWH)	100.3	81.2	21.3		**202.74**
Total Peak Savings (MW)	20.1	16.6	5.2		**42.01**
Total Cumulative Natural Gas Savings (MMTh)	4.6		0.9	3.5	**8.95**
Total Savings		PY 2004-2007			
Total Cumulative Savings (GWH)	2,483.9	3,199.2	751.8	0.0	**6,434.99**
Total Peak Savings (MW)	509.6	593.7	152.7	0.0	**1,255.99**
Total Cumulative Natural Gas Savings (MMTh)	34.8	0.0	7.2	43.8	**85.76**
MPS Individual Metric Performance					
Percent of GWH Goal	76%	88%	68%	0%	81%
Percent of MW Goal	72%	78%	73%	0%	75%
Percent of MMTh Goal	74%	0%	75%	82%	78%
MPS Average Metric Performance	**74%**	**83%**	**72%**	**82%**	**78%**
PEB					
TRC Net Benefits	$ 338,308,722	$ 346,991,860	$ 122,152,531	$ 29,338,212	$ 836,791,325
PAC Net Benefits	$ 459,362,373	$ 565,830,107	$ 168,512,492	$ 89,338,576	$ 1,283,043,548
PEB	$ 378,659,939	$ 419,937,942	$ 137,605,851	$ 49,338,334	$ 985,542,066
PEB at MPS Threshold	**$ -**	**$ -**	**$ -**	**$ 49,338,334**	**$ 49,338,334**
Earnings/Penalty Cap	$ 180,000,000	$ 200,000,000	$ 50,000,000	$ 20,000,000	$ 450,000,000
Earnings Rate	**0%**	**0%**	**0%**	**9%**	
Total Earnings	$ -	$ -	$ -	$ 2,886,293	$ 2,886,293
Penalties	NO	NO	NO	NO	
Total Penalties					$ -

Table 32: RRIM Calculator Output without Interactive Effects

	First Earnings Claim (PY2006-2007)				
	PG&E	SCE	SDGE	SoCalGas	Total
Savings Goals		PY 2004-2007			
Total Cumulative Savings (GWH)	3,260.0	3,621.0	1,102.4	0.0	**7,983.40**
Total Peak Savings (MW)	708.0	760.0	209.5	0.0	**1,677.50**
Total Cumulative Natural Gas Savings (MMTh)	47.0	0.0	9.5	53.3	**109.80**
MPS Goals (80% of goal)					
Total Cumulative Savings (GWH)	2,608.0	2,896.8	881.9	0.0	**6,386.72**
Total Peak Savings (MW)	566.4	608.0	167.6	0.0	**1,342.00**
Total Cumulative Natural Gas Savings (MMTh)	37.6	0.0	7.6	42.6	**87.84**
Dead Band (65% of goal)					
Total Cumulative Savings (GWH)	2,119.0	2,353.7	716.6	0.0	**5,189.21**
Total Peak Savings (MW)	460.2	494.0	136.2	0.0	**1,090.38**
Total Cumulative Natural Gas Savings (MMTh)	30.6	0.0	6.2	34.6	**71.37**
Achieved Savings Towards MPS					
EE Portfolio Savings (adjusted ex-ante)		PY 2006-2007			
Total Cumulative Savings (GWH)	1,249.3	1,437.3	370.2		**3,056.82**
Total Peak Savings (MW)	214.8	242.1	77.6		**534.47**
Total Cumulative Natural Gas Savings (MMTh)	21.3		3.4	26.2	**50.86**
50% C&S Savings (adjusted ex-ante)		PY 2006-2007			
Total Cumulative Savings (GWH)	69.2	69.3	16.2		**154.70**
Total Peak Savings (MW)	19.8	18.7	4.7		**43.20**
Total Cumulative Natural Gas Savings (MMTh)	1.9		0.2	3.1	**5.20**
04-05 EM&V Adjusted EE Portfolio Savings					
Total Cumulative Savings (GWH)	1,011.4	1,497.9	342.6		**2,851.90**
Total Peak Savings (MW)	216.9	270.5	59.3		**546.66**
Total Cumulative Natural Gas Savings (MMTh)	19.1		4.5	11.1	**34.71**
EM&V Adjusted LIEE Savings		PY 2004-2007			
Total Cumulative Savings (GWH)	100.3	81.2	21.3		**202.74**
Total Peak Savings (MW)	20.1	16.6	5.2		**42.01**
Total Cumulative Natural Gas Savings (MMTh)	4.6		0.9	3.5	**8.95**
Total Savings		PY 2004-2007			
Total Cumulative Savings (GWH)	2,430.2	3,085.8	750.2	0.0	**6,266.16**
Total Peak Savings (MW)	471.7	547.9	146.8	0.0	**1,166.34**
Total Cumulative Natural Gas Savings (MMTh)	46.8	0.0	9.1	43.8	**99.72**
MPS Individual Metric Performance					
Percent of GWH Goal	75%	85%	68%	0%	78%
Percent of MW Goal	67%	72%	70%	0%	70%
Percent of MMTh Goal	100%	0%	96%	82%	91%
MPS Average Metric Performance	**80%**	**79%**	**78%**	**82%**	**80%**
PEB					
TRC Net Benefits	$ 371,346,746	$ 319,491,827	$ 131,994,937	$ 29,338,212	$ 852,171,722
PAC Net Benefits	$ 492,400,397	$ 538,330,073	$ 179,017,709	$ 89,338,576	$ 1,299,086,755
PEB	$ 411,697,963	$ 392,437,909	$ 147,669,194	$ 49,338,334	$ 1,001,143,400
PEB at MPS Threshold	**$ -**	**$ -**	**$ -**	**$ 49,338,334**	**$ 49,338,334**
Earnings/Penalty Cap	$ 180,000,000	$ 200,000,000	$ 50,000,000	$ 20,000,000	$ 450,000,000
Earnings Rate	**0%**	**0%**	**0%**	**9%**	
Total Earnings	$ -	$ -	$ -	$ 2,886,293	$ 2,886,293
Penalties	NO	NO	NO	NO	
Total Penalties					$ -

8. Changes Made to the Final Report

In response to parties' comments to Energy Division's Draft Verification Report, the following changes have been made to the Final Verification Report:

8.1. Policy Changes

To address the issue of interactive effects, Energy Division's Final Verification Report presented three different sets of results: Without Interactive Effects, With Both Positive and Negative Interactive Effects, and With Positive Interactive Effects Only.

This required the creation of three sets of Interim Databases, which are used to update the UES values in the VRTs. The Interim Databases can be found in Appendix O. Additional documentation can be found in Appendix O.

In addition, the 95/5 residential/non-residential split was applied to SDGE 3016. The methodology is described below:

To reallocate savings for the residential upstream lighting program to a nonresidential sector, weighted average unit energy savings (UES) values (kW, kWh, therms) were calculated for screw-in CFL's only. The list of measures is listed in Table 33 below.

Table 33 – List of SDGE3016 Upstream Lighting Screw-in CFL Measures

235144-Screw-in CFL (<=12 watt) <800 Lumens
235133-Screw-in CFL (13 watt) <800 Lumens
235057-Screw-in CFL (13 watt) 800-1,099 Lumens
235019-Screw-in CFL (14 watt) <800 Lumens
235134-Screw-in CFL (14 watt) 800-1,099 Lumens
235135-Screw-in CFL (15 watt) 800-1,099 Lumens
235145-Screw-in CFL (15 watt) >=1,100-1,599 Lumens
235061-Screw-in CFL (18 watt) >= 1,100-1,599 Lumens
235023-Screw-in CFL (20 watt) <1,100 Lumens
235136-Screw-in CFL (20 watt) >=1,100 Lumens
235063-Screw-in CFL (23 watt) <1,600 Lumens
235126-Screw-in CFL (23 watt) >=1,600 Lumens
235085-Screw-in CFL (25 watt) >=1,600 Lumens
235083-Screw-in CFL (26 watt) >=1,600 Lumens
235027-Screw-in CFL (30 watt) >=2,001 Lumens
235052-Screw-in CFL (>39 watt) >=1,600 Lumens

The new UES values were calculated using 95% residential savings and 5% nonresidential savings. Mathematically this is represented by the formulas below:
kW = (0.95*residential+kW)+(0.05*nonresidential+kW)
kWh = (0.95*residential+kWh)+(0.05*nonresidential+kWh)
therms = (0.95*residential+therms)+(0.05*nonresidential+therms)

Weighted average UES values were calculated for individual wattages listed in Table 33 above. The UES values for screw-in CFL's within the VRT were then updated with the newly calculated savings where the wattages matched. The fields within the VRT that were updated are listed below in Table 34.

Table 34 – List of VRT variables updated with new weighted average calculated values

EDUpdatedExAnteGrUnitSavkw
EDUpdatedExAnteGrUnitSavkwh
EDUpdatedExAnteGrUnitSavtherms
EDUpdatedExAnteGrSavkw
EDUpdatedExAnteGrSavkwh
EDUpdatedExAnteGrSavtherms
EDDEERExAnteGrUnitSavkw
EDDEERExAnteGrUnitSavkwh
EDDEERExAnteGrUnitSavtherms

8.2. Log of Corrections Made to Modeling Tools and Inputs

Comments/Corrections Made	Where
Used Interactive DEER numbers, removing any negative therm interactive effects	Interim DB (Impact ID Table)
Mapped all upstream CFL measures that readily mapped to DEER 06-07 measures	Interim DB (Technology ID Table)
Mapped PGE2000 and SDGE3028 refrigerator/freezer recycling measures	Interim DB (Technology ID Table)
Changed refrigerator/freezer recycling weights	Interim DB (Impact ID Table)
SEMPRA and PGE upstream measures received territory-weighted climate zone	Interim DB (Climate Zone Table)
SDGE3028 default building type received Res Single Family	Interim DB (Building Type Table)
Scaled up UES for the SEMPRA 40-watt base case T8+s	Interim DB (Impact ID Table)
Mapped Medical Clinic building types to Health/Medical - Nursing Home in DEER	Interim DB (Building Type Table)
The VRT Contains FALSE Errors Which Incorrectly Count SCE's Benefits: Certain measure/sector combinations were not being correctly mapped to legal sector/shape combinations as determined by the E3 calculator. Our mapping table was updated to map all measures to legal sector/shape combinations.	The change was made in a lookup table in the VRT Access database.
The VRT Incorrectly Applies its Climate Zone Mapping to SCE: SBW was mapping the climate zone to S+STEM, the system-wide +average+ climate zone, in all cases where the zipcode mapping failed, or where the zipcode mapping produced two distinct values. The fix is to select either the predominant climate zone for the zipcode or a valid Program Tracking or E3 climate zone for the measure before defaulting to S+STEM. This change affects SCE2517, SCG3513, SDGE3025, and SDGE3010.	The change is in the VRT. The value is calculated in file VRT+Calculator+[program]+UES+EUL+IRate+RR+NTGR.xls
Incorrect Mapping of DEER EUL: Some building type/lighting measure combinations were not found in our EUL lookup table, with the result that the EUL in the VRT was the EUL from either Program Tracking or the E3. The fix was to update the EUL lookup table to include all building type/measure combinations.	The change is in the VRT. The value is calculated in file VRT+Calculator+sce2517+UES+EUL+IRate+RR+NTGR.xls
For the SCE2517 Express Efficiency program, the annual kWh and kW savings in the VRT did not match the E3 reported values: In Program Tracking data, SCE reported savings in two ways - gross savings per measure, and gross unit savings per measure. SBW used the former in the VRT. SBW has since found that the second method matches the savings reported in the submitted E3. The fix was to change the method of calculating per measure kWh and kW savings to (unit savings * unit count) for Express Efficiency measures. The result is a 13.5% decrease in Express kWh savings, and a 4.7% increase in Express kW savings.	The change is in the VRT. Changes were made in the Access database to calculate the savings the second way, and in the file VRT+Calculator+sce2517+UES+EUL+IRate+RR+NTGR.xls to use the new savings values.

Comments/Corrections Made	Where
Incorrect rebate total in SEMPRA E3 filing for SDGE3010: We reviewed the response from Sempra concerning the rebate total for this program. They admit to a mistake in their filed E3. They assigned +640,609.30 to program-level cost that should have been included in the end user rebates. The VRT passes thru the program-level costs without modification, so our current VRT is double counting this expense. Their program tracking data for the rebate was correct, they just reclassified this portion for some reason.	The only way we can think of to correct this would be to enter the double counting amount (+640,609.30) as an adjustment in the RRIM calculator SDGEAdj sheet. This amount (as a positive value) would be entered under both the TRC and PAC net benefits columns.
U updated Lookup+IOU+Elec+Shape lookup table to include valid combinations that were previously missing	VRT+4.5
Two new programs (SCE2547 and SCE2558) included in the IOU+E3+Cost+Q42007 and IOU+E3+Output+Q42007 tables . These only affect cost. They have no savings.	VRT+4.5
Includes latest QCTest Queries	VRT+4.5
New QCTest Summary query which returns values for all QCTest queries that have records	VRT+4.5
New QC Verification Table tab. This includes an option to import Verification table from another VRT. All of the QC Test queries can be run from this tab, including the new QC Test Summary.	VRT+4.5
Code validation check of FALSE values in the Climate Zone, Target Sector, and Measure column (column G). FALSE values in column G are tracked for each run. If FALSE values are detected for a Program, then a message box will appear to warn the user. If E3 files are saved, then the file will be flagged with a FALSExN in the filename, where N = the number of exceptions.	VRT+4.5
Measures in Multi-Family Lighting program incorrectly aggregated at building level in some instances: Disaggregated multi-family lighting measures; in cases where specific install rates couldn+t be determined, the weighted average install rate by measures category is applied	PGE 2000
Match between E3 and Program Tracking data is approximately complete	PGE 2000
An issue arose where the VRT rule used to define EDImputedExAnteGrUnit savings variables did not account for situations when the Program Tracking quantities differed from the quantity provided in the verification data (as defined by EDFilledExAnteQuantity). As a result, savings for the Appliance Recycling program were incorrect: To address this issue, we are now multiplying the EDImputed values by the EDFilled quantities, so that the EDUpdated unit savings values are corrected. Savings values for the Appliance Recycling program thus have been corrected.	PGE 2000
R30 Reflector measures (non-HIM) received an installation rate of 0, due to its inclusion in the verification data:	PGE 2000

Comments/Corrections Made	Where
Install rate for R30 Reflector set to 1	
A few instances existed where incentives were being double-counted (under rebates for end use customers and under incentives to others: Instances where this was an issue were addressed and corrected	PGE 2000
Double counting install rate for upstream CFL measures that were not updated via the new DEER updates: New install rate of 88 % (67%/76%) to upstream measures not receiving DEER updates	PGE2000
The VRT Does Not Properly Report the Costs Associated With SCE's 2006- 2007 Claim: This was 99% due to the 95/5 reallocation of upstream CFL+s- an error in SAS code led to a several thousand CFL+s incentives excluded- this is not fixed	SCE2501
IOU Tracking Systems Were Incorrectly Imported To VRT: This was due to the check+date missing for all of the indicated missing measures - instead the latest date falling within the 2006-2007 range and non-null date within the tracking database was used	SCE2501
The VRT Incorrectly Applies the Recommended Verification Rates From The Contractor Verification Reports Into the Databases: For this question there are two issues – one is that the installation rate differs between the verification report and the VRT, and the second is that rate differs within the VRT among the same verification group. To address the second issue, the installation rate exists on a site by site basis and therefore some sites may have had 33% of the expected measure quantity installed while others had 80% or 100%. All measures that are part of the verification measure grouping that were not sampled should have an indeed did receive a consistent installation rate. To address the first question – where installation rates differed between the report and the VRT – this was due to the reexamination of the installation rate algorithms used for the original verification report and finding that revised algorithms were more appropriate and accurate measurements for some programs.	SCE2501
Incorrect Mapping of DEER UES Assumptions: The latest version of the VRT resolves this issue. Since SCE's upstream CFL program accomplishments already incorporates an ISR of 90 percent, the VRT now applies an adjustment factor of 74.44 percent (67 percent / 90 percent) to the upstream CFL program accomplishments to simulate an installation rate of 67 percent for those upstream measures not updated by the interim DEER revisions.	SCE2501
Incorrect Mapping of DEER NTG: All NTG errors within the SCE2501 program as reported by SCE were resolved and are now correctly applied in the latest version of the VRT database.	SCE2501
Incorrect Mapping of DEER EUL: All EUL errors within the SCE2501 program as reported by SCE were resolved and are now correctly applied in the latest version of the VRT database	SCE2501

Comments/Corrections Made	Where
Incorrect Incremental Cost Assumptions: Tracking-level costs for all four SCE2501 tracking databases were incorrectly assumed to be the incremental costs used as inputs to the SCE2501 E3 calculator. The application of E3 incremental costs at the appropriate measure level were applied to the latest versions of the SCE2501 VRT database.	SCE2501
Upstream CFL for C&I program did not receive the 67% installation rate: Applied the 67% installation rate to upstream C&I CFL measures	SCE2501
Corrected the NTG for SCE2511 to 0.85 because they are direct install.	SCE2511
Corrected the EULs for SCE2511 by using the correct building types.	SCE2511
Corrected the EULs for SDGE3020 and SDGE3012 by using the correct building types.	SDGE3020
Changed PGE Upstream Screw-in Lighting from 90/10 to 95/5 and changed the install rate to .67.	PGE2080
Changed EDUpdatedExAnteEndUserRebate, EDUpdatedExAnteIncentiveToOthers, EDUpdatedExAnteDirectInstallLab, EDUpdatedExAnteDirectInstallMat, and EDUpdatedExAnteGrMeaCost to be multiplied by the inverse of the install rate.	
For SCE2511 we used the ratio of the direct install materials to labor amount to separate the total direct install amount found in the tracking database.	SCE2511

8.3. Other **Changes Made in Response to IOU Comments**

Comments Page #	IOU	IOU Recommended Changes	Program	ED Response
19	SCE	The costs associated with SCE's Emerging Technologies program (SCE2515) are included in ED's calculation of SCE's PEB.	SCE2515	This will be adjusted in the future using the +adjustment+ tab of the RRIM spreadsheet
19	SCE	The Aggregation of Housing Agencies program (SCE2547) and the Modernization and New Construction Program for Schools (SCE2558) are not included in the Draft Report.	SCE2547, SCE2558	This was corrected in the VRT v.4.5
19	SCE	The Draft Report does not include the costs associated with SCE's EM&V projects.		This will be adjusted in the future using the +adjustment+ tab of the RRIM spreadsheet
20	SCE	The Draft Report incorrectly includes the achievements of SCE's Palm Desert program (SCE2566) towards the MPS in direct contradiction to CPUC policy.	SCE2566	This will be adjusted in the future using the +adjustment+ tab of the RRIM spreadsheet
20	SCE	The Draft Report contained an error in the formula that calculated the recommended penalty for SCE.		This will be corrected in the RRIM spreadsheet
21	SCE	The Draft Report changes SCE's market sector allocation of its Upstream CFL program.		ED applied 95/5 to all upstream lighting programs
23	SCE	In the lighting portion of the Nonresidential Direct Installation (SCE2511) program, DEER effective useful lives, which would produce a significantly positive effect, were not updated.	SCE2511	EULs were updated in the SCE2511 VRT
23-24	SCE	The following statement should be removed from the Final Report as SCE abides by the reporting requirements approved by the Commission: "It should be noted that ED believes the utilities continue to be out of compliance with the 2/21/2006 ALJ ruling…which require the utilities to report measure level data that is not aggregated in any way in their quarterly reports.18"		The statement is a reference to the IOUs quarterly measure lists generally not being disaggregated.
24	SCE	The Draft Report grossly errs in updating non-incremental cost values for the Upstream Lighting program.	SCE2501	The application of E3 incremental costs at the appropriate measure level were applied to the latest versions of the SCE2501 VRT database.

Comments Page #	IOU	IOU Recommended Changes	Program	ED Response
48	SCE	Interactive effects should be included only for nonresidential applications in the Final Report.		ED presented results with positive interactive effects, interactive effects, and without interactive effects
63	SCE	The Draft Report is incorrect in its +compromise+ of a 95/5 res/nonres split.	SCE2501	ED applied 95/5 to all upstream lighting programs
64	SCE	It should be pointed out that the E3 Calculator, version 4a, does not contain this error and is what SCE uses to report its savings and cost-effectiveness to the Commission.		For the final verification report ED used version 4b, but will explore using 4a in the future
64	SCE	The VRT used in the Draft Report incorrectly accounts for expenditures incurred in 2006-2007 by SCE.	SCE2501, SCE2511, SCE2517	These variances were fixed; however, some were due to rounding errors.
65	SCE	SCE's Residential Energy Efficiency Incentive program (SCE2501) there were 174,798 units missing from the VRT (Upstream Lighting was missing 96.019 units; Single Family rebates had a discrepancy of 78,779 units; Lightwise had 8,911 units that appear to be inadvertently lumped together with Upstream Lighting.	SCE2501	This was corrected in the SCE 2501 VRT
66	SCE	Express Efficiency (SCE2517) had 44 units missing	SCE2517	No changes were made since ED did not find the discrepancies that SCE pointed out.
66-67	SCE	24 of the 38 measures have a verification rate discrepancy	SCE2501, SCE2511, SCE2517	This inconsistency was due to the reexamination of the installation rate algorithms used for the original verification report and finding that revised algorithms were more appropriate and accurate measurements for some programs.
68	SCE	17 of SCE~~'s~~ measures have a +False statement+ in the E3 calculation		This is fixed in VRT v.4.5: Certain measure/sector combinations were not being correctly mapped to legal sector/shape combinations as determined by the E3 calculator. Our mapping table was updated to map all measures to legal sector/shape combinations.

Comments Page #	IOU	IOU Recommended Changes	Program	ED Response
69	SCE	There are 20 cases where the VRT zip code was inappropriately mapped to +system+ when it should have been mapped to climate zone 5.		This was fixed in the program-specific VRT by selecting either the predominant climate zone for the zipcode or a valid Program Tracking or E3 climate zone for the measure before defaulting to S+STEM.
70	SCE	ED did not include 2004-2005 IDEEA programs that would have achieved over 37 million kWh and 5 MW.		This was corrected in the final report.
70	SCE	ED did not include five Summer Initiative programs that would have achieved over 178 million kWh and 48 MW.		This was corrected in the final report.
73	SCE	For ED to obtain the final results from programs that did not receive an impact evaluation, the results from the 2006 EE Annual Report need to be used. This error miscalculated SCE's program impacts by nearly 47 million kWh and nearly 4 MW.		ED used the 2006 Annual Reports with some exceptions. Please see revised section 5 of final report on 2004-05 data.
73	SCE	SCE's California New Homes Program and Savings By Design programs paid after 2005 appear not to be included in the Draft Report.		No changes were made. Please see revised section 5 of final report on 2004-05 data.
77	SCE	The following list of programs verified installation rate need to be revisited to ensure that any installation rate calculation does not include early removals and breakage of installed measures: Upstream CFL Program Multifamily Rebate Program Small Commercial Contract group(multiple programs) Major Commercial Contract group (multiple programs)		ED did not address this recommendation at this time.
79	SCE	The installation rate should thus include bulbs that have burned out or been removed.		ED did not address this recommendation at this time.
87	SCE	Medical Clinic building type should have been mapped to a more similar Nursing Home building type contained in DEER 2008	SCE2511, SCE2517	This was corrected in the Interim DB
87	SCE	The Draft Report incorrectly applied an installation rate twice on CFL measures that were "passed though." This error occurred with CFLs found in SCE's Upstream Lighting (SCE2501) program that were purposely not mapped to DEER 2008.	SCE2501	New install rate of 88 % (67%/76%) applied to upstream measures not receiving DEER updates in PGE2000 VRT

Comments Page #	IOU	IOU Recommended Changes	Program	ED Response
88	SCE	There are two different ED-updated ex ante gross unit savings values shown for the same lamp. In the VRT database, the 204.65 kWh value is designated for a 20 watt CFL along with a value of 221.83 kWh for the same CFL.		This was corrected in the Interim DB
88	SCE	There are two different ED-updated ex ante gross unit savings values shown for the same measure: the linear fluorescent update received a value of 755.905 kWh in some cases and 789.072 kWh in other cases.	SCE2517	This was corrected in the Interim DB
88	SCE	The appliance recycling program was mapped incorrectly to DEER 2008.	SCE2500	ED did not address this recommendation at this time.
89	SCE	ED+s 79% realization rate was incorrectly applied in some cases as the final measure values in the VRT are substantially less than 79% of the ex ante value. Furthermore it is unclear if a double realization rate adjustment was made in this program, as SCE already uses a realization rate of 89%.	SCE2517	No change made. There is no double realization rate adjustment. 79% was applied properly in SCE2517 VRT.
90	SCE	Incorrect mapping of DEER NTG: Specialty CFLs should be 85% not 60%	SCE2501 (Upstream Lighting)	All NTG errors are now correctly applied in the SCE2501 VRT
90	SCE	Incorrect mapping of DEER NTG: Screw-In CFLs should be 80% not 60%	SCE2501 (lightwise)	All NTG errors are now correctly applied in the SCE2501 VRT
90	SCE	Incorrect mapping of DEER NTG: CFL fixtures should be 85% not 80%	SCE2501 (Staple)	All NTG errors are now correctly applied in the SCE2501 VRT
90	SCE	Incorrect mapping of DEER NTG: Occupancy Sensors should be 84% not 77%	SCE2517	No change made. Occupancy sensor NTG should be 77%
90	SCE	Incorrect mapping of DEER NTG: All direct install refrigeration should be 85% not 46-80%	SCE2511	Corrected the NTG to 0.85 in the SCE2511 VRT
90	SCE	the EULs for the Nonresidential Direct Installation (SCE2511) program were not updated	SCE2511	Corrected the EULs by using the correct building types in the SCE2511 VRT
91	SCE	Incorrect EUL: LED night light should be 16 not 8	SCE2501 (Staple)	All EUL errors are now correctly applied in the SCE2501 VRT
91	SCE	Incorrect EUL: Torchiere should be 16 not 9	SCE2501 (Staple)	All EUL errors are now correctly applied in the SCE2501 VRT

Comments Page #	IOU	IOU Recommended Changes	Program	ED Response
91	SCE	Incorrect EUL: Linear Fluorescents DEER 2008 EUL formula not applied in all cases	SCE2517	The EUL lookup table in the SCE2517 VRT was fixed to include all building type/measure combinations.
91	SCE	Draft Report made a significant error by updating the incremental costs in the Upstream Lighting (SCE2501) program.	SCE2501 (Upstream Lighting)	The application of E3 incremental costs at the appropriate measure level were applied to the latest versions of the SCE2501 VRT database.
9	Sempra	SDG&E and SoCalGas final core utility program 2004-2005 results are reported in their respective 2006 Annual Report		ED was not able to use SDG&E and SoCalGas 2006 Annual Reports because the data were not provided in a disaggregated format. Please see revised section 5 of final report on 2004-05 data
9	Sempra	There are many instances where customers still have T12 F40 lamps and this was ignored in the update to use DEER	SDGE3020, SDGE3012	The new Interim DB has scaled up UES for the SEMPRA 40-watt base case T8+s
10	Sempra	SDG&E believes that the final split between residential and nonresidential for the upstream lighting should be applied consistently	SDGE3016	ED applied 95/5 to all upstream lighting programs
10	Sempra	SDG&E believes that the savings and NTG should be included in the final Verification Report as SDG&E provided in the E3 calculator. SPC realization should not be applied to Energy Savings Bid projects.	SDGE3020	No change was made because ED believes that the proper realization rates were applied to the Bid projects.
10	Sempra	SDG&E and SoCalGas however do not agree with the magnitude of the heating and cooling impact that the DEER Team estimates for CFLs in residential homes		This is a DEER issue and cannot be addressed in this report
4	PGE	Interactive effects should not be considered at least until the commission revisits the energy-saving goals		ED presented results with positive interactive effects, interactive effects, and without interactive effects
7	PGE	PG&E recommends that the CPUC return to the ex ante in-service rates until additional data is presented addressing the too-soon-after-purchase customer data.	PGE2000	No changes were made.
8	PGE	The PGE Industrial verification report includes net-to-gross data from various years for the Savings by Design program that has been averaged but not weighted. This is mathematically incorrect.	PGE2004	The VRT calculation just took the DEER values. ED may consider this recommendation in future DEER updates.
9	PGE	There is no convincing evidence to change the existing 90/10 split and it should be left “as is” until studies are finalized.	PGE2000, PGE2080	ED applied 95/5 to all upstream lighting programs

Comments Page #	IOU	IOU Recommended Changes	Program	ED Response
9	PGE	The 2005 savings values from the 2005 LIEE Annual Report should be used. This correction results in 5.34 MW, 25 GWh, and 1.11 MM therms for 2005.		No changes were made.
10	PGE	The draft verification report employs incorrect data for the 2004-2005 period savings. This correction results in 357MW, 1,741GWh, and 45MM therms for that period.		ED used the 2006 Annual Reports with some exceptions. Please see revised section 5 of final report on 2004-05 data.
10	PGE	For residential refrigerator recycling and residential ceiling insulation, the measure name, measure unit, and climate zone are all the same, yet the database adjusts the same measure by varying percentages for the unit energy savings.	PGE2000	The residential refrigerator recycling UES values were updated in the Interim DB.
10	PGE	Since PG&E's upstream CFL program accomplishments already incorporates an ISR of 76 percent, the VRT should have applied an adjustment factor of 88 percent (67 percent / 76 percent) to the upstream CFL program accomplishments to simulate an installation rate of 67 percent.	PGE2000	This rate was applied to the PGE2000 VRT
10	PGE	In order to account for the correct energy savings from the 2004– 2005 program accomplishments, the energy savings from the commitments paid after 2005 for the RNC and SBD programs need to be included in the final verification report.		No changes were made. Please see revised section 5 of final report on 2004-05 data.

8.4. ED Responses to Parties' Comments

+	Party	Comment Summary	Response
1	SCE	Application of the DEER Updates Not Based on Ex Post Studies and Is Inconsistent with the Adopted Protocols	Energy Division+s decision to update ex-ante parameters with values found in DEER is pursuant to D. 08-01-042, OP 3(b). See pages 14 to 16 of that decision for the discussion, +For measures included in the Database for Energy Efficient Resources (DEER), however, we will update the values contained in the E3 calculators with the 2008 and 2009 DEER updates of ex ante measure savings parameters, including net-to-gross ratios and expected useful lives+. The DEER update was completed consistent with the process protocols adopted by the Jan. 11, 2006 (R. 01-08-028) and Jan. 2, 2007 (R. 06-04-010) ALJ rulings. Energy Division staff circulated requests for technical participation from parties, provided draft materials to parties, held several meetings to discuss technical issues, provided opportunities for written comments, and responded to written comments in writing. DEER used ex-post studies to calibrate models and develop net-to-gross ratios. In some cases, Energy Division and their contractors obtained information from studies that were still ongoing, which was anticipated be D. 05-01-055, Section 5.3.2 +In performing the Research and Analysis functions, Commission and CEC staff should have full flexibility to obtain input from various sources, including working groups of experts or hired consultants, as they deem appropriate to the circumstances+.
2	SCE	Application of the DEER Expected Useful Lives – A Metric Not Subject To True-Up by Ex Post Measurement Studies – Is Inconsistent With the Adopted Protocols	Energy Division+s decision to update ex-ante EULs with EUL values found in DEER is pursuant to D. 08-01-042, OP 3(b). See pages 14 to 16 of that decision for the discussion, +For measures included in the Database for Energy Efficient Resources (DEER), however, we will update the values contained in the E3 calculators with the 2008 and 2009 DEER updates of ex ante measure savings parameters, including net-to-gross ratios and ***expected useful lives.*** [emphasis added] +

+	Party	Comment Summary	Response
3	SCE	The Verification Report Goes Well Beyond the Protocols	Energy Division is implementing Commission Decisions 07-09-043 and 08-01-042 in preparing the verification report. In response to the comment, +There is no reason for a pre-calculation of earnings to be performed in a report which is supposed to be focused on unit counts and costs.+ See +Note+ at bottom of Attachment 6 of D.0709-043, +Interim claims are based only on the verification reports.+ This is precisely why the advice letter filing come ***after*** the issuance of ED+s verification report and not before.
4	SCE	Future Evaluation, Measurement, and Verification Reports Must be Timely	In response to the comment, +The adopted protocols allowed for the flexibility of reports, such that not every program may receive a report each year.+ ED has exercised this flexibility in only selecting the top 21 programs to receive a verification study. However, ED agrees that future EM&V reports and the utility data required by ED to produce the EM&V reports should be timely.
5	SCE	The Energy Division Made Significant Errors that Bring Question to the Integrity of the Draft Report	The errors SCE identified errors are corrected in the final version issued on 1/15/09. Part of the purpose of the draft verification report was to allow stakeholders to identify errors. Attachment 7 of D.07-09-043 indicates, +Stakeholders have an opportunity to provide written comments to Energy Division identifying any errors in the draft Verification Report+.
6	SCE	Energy Division is Over-Stepping the Direction Provided by the CPUC	see response to specific comments below
7	SCE	Draft Report Reverses CPUC Direction on Cumulative Savings for 2006-07 Interim Claims	ED+s decision to factor in savings from 2004 is pursuant to D. 0709-043, OP 4 (b), which states, +Interim claims shall be evaluated on a "Cumulative-to-Date" basis, which counts the verified achievements from program year(s) in determining whether the MPS is met in each subsequent interim claim.+ See page 120 of that decision for a discussion of a +Cumulative-Program-Cycle-Basis+ which is what SCE argues for in this comment, and which was rejected in the decision.

+	Party	Comment Summary	Response
8	SCE	The CPUC-Approved Methodology to Calculate Energy Savings and Performance Earnings Basis is the E3 Calculator, Not the VRT	Energy savings calculations are not done within the VRT. All energy savings calculations are done within the E3 Calculator. The VRT is simply a tool that facilitates and automates the running of the E3 Calculator. The results of the E3 Calculator runs are saved in the VRT database. The E3 files can also be saved. This allows for a transparent and verifiable way to ensure that what is saved in the database matches the E3 files. Once results are saved in the VRT database, they can be aggregated, or rolled-up, for Program or IOU. The results can also be compared to the claimed values.
9	SCE	Energy Division Incorrectly Recommends Changes to Commission Policy Regarding the Discount Rate (Weighted Average Cost of Capital)	Energy Division continues to use 7.49% in the final verification report.
10	SCE	ED Is Bypassing EM&V Protocols in the Draft Report	The issues that SCE raises in this comment and the specific examples provided are components of verifying the proper installation of measures. Some telephone surveys were implemented as part of the installation verification work, which were supplemented with a sample of on-site surveys. The EM&V protocols give ED a significant amount of discretion. See page 1 in the Introductory section of the *California Energy Efficiency Protocols*, which states: The +Protocols are the primary evaluation guidance documents for all types of evaluations presented in these Protocols, however this is not to be construed as limiting the ability of the CPUC or the Joint Staff to evaluate items in addition to or beyond those identified in these Protocols or to use evaluation processes and procedures beyond those presented in these Protocols. While these Protocols are the key guiding documents for the program evaluation efforts, the CPUC and the Joint Staff reserve the right to utilize additional methodologies or approach if they better meet the CPUC's evaluation objectives and when it serves to provide reliable evaluation results using the most cost-efficient approaches available+
11	SCE	ED Incorrectly Calculates the Performance Earnings Basis	These details were corrected in the final
12	SCE	ED Incorrectly Calculates the Minimum Performance Standard	These details were corrected in the final
13	SCE	Draft Report Incorrectly Calculated Earnings/Penalty Amounts	These details were corrected in the final

+	Party	Comment Summary	Response
14	SCE	ED Arbitrarily Determines What To and Not To Include in the Draft Report	The market sector allocation of Upstream CFLs is not arbitrary or opinion based, as documented in the verification report. Interactive effects are included in the final report.
15	SCE	Clear CPUC Policy on Nonresidential Interactive Effects	We have run two additional scenarios in the final report. One has only +positive+ interactive effects and one has both +positive+ and +negative+ interactive effects.
16	SCE	Draft Report Focuses on High Impact Measures That Were Negatively Affected by DEER 2008 and Does Not Address Measures That Were Positively Affected by DEER 2008	This comment suggests the Energy Division intentionally rigged the results to prevent SCE from obtaining its goals. The focus on high impact measures for both the verification report and DEER updates are based on the significance of those measures to the total portfolio savings, not based on the direction and magnitude of the changes made by DEER.
17	SCE	ED Makes Errors in their Assertions of SCE Non-Compliance	The footnote which makes this statement is referring to the utilities in general, not specifically to SCE.
18	SCE	Lack of Transparency in Draft Report Hampers IOU Review	ED makes ever effort to provide all the documentation to stakeholders and write the narrative of the report to be consistent with the analysis and data provided in the appendices.
19	SCE	CPUC Goals and Earnings Estimates Were Based Upon Current IOU Ex-Ante Estimates	SCE indicates that they believe that the goals were set on a different set of ex ante assumptions than the recent DEER updates and that thus performance should be measured relative to goals using the previous ex ante data. The decision to update the ex ante assumptions based on the latest DEER was made by the CPUC in the first PTM decision. ED+s charge in this report is to implement that decision and apply the updates from DEER. The issue of whether greater consistency is needed or should be sought between key factors underlying the original goals analyses (e.g., imbedded net-to-gross savings ratios) and the current DEER estimates is a policy issue that falls outside the scope of the ED report.

+	Party	Comment Summary	Response
20	SCE	DEER Updates (Partially) Finalized in Late October 2008	The comments about DEER 2008 having not updated measure costs are incorrect and not relevant. ED has chosen not to update, but rather to retain, the ex ante measure costs as claimed by the IOUs for the first verification report, and therefore published no measures cost values it intended to use for an ex ante update. The IOUs were directed to use DEER measure costs for deemed measures and actual costs for customized or direct installed measures. DEER 2008 measure costs were updated for many measures and DEER 2005 values were retained for others; ED has assumed that the IOUs followed the CPUC direction to use the most up-to-date DEER values or actual values and chose not to change any IOU claimed measure cost values. It is true that there were limited new EM&V results or data available for use in the DEER 2008 update or the ED ex ante update. The two sources of such data are the 2004-2005 EM&V studies and the 2006-2008 studies. The 2004-2005 studies were contracted by the IOUs and the IOU have received the preliminary results of those studies while they were being developed. Except for NTG values for SPC and Express Efficiency, the DEER team did not see those results until their final results were published and long after the IOU had reviewed the values. Although the ED interim reports were eliminated the IOUs have had ongoing access to 2004-2005 results which could have been used to update their savings claims well ahead of the ED ex ante update using the same or similar values. In fact, the IOU have been constantly updating their ex ante values but chose not to use some 04-05 results. The IOU were directed by several rulings to update their planning values with recent results, particularly for NTGs, but chose not to do so while continuing to use values that are known to be overly optimistic. SCE complains that doing the updates now, which they were requested to do before the cycle started, is unfair.
21	SCE	DEER 2008 for 2006-07 Is incomplete	As stated above, the comments about DEER 2008 having not updated measure costs are incorrect and not relevant. ED has chosen not to update, but rather to retain, the ex ante measure costs as claimed by the IOUs for the first verification report. In this comment it is implied that ED should have updated DEER 2008 in December after new results were available. In other comments it was suggested that ED updates DEER too often, and in yet other comments it is suggested that there should be no such updates and the values should be left at those developed by the IOUs for their 2006-2008 planning.

+	Party	Comment Summary	Response
22	SCE	ED Did Not Implement A Proper Vetting Process that Facilitates Valued IOU Input	The DEER team managed by Energy Division completed a vetting process consistent with the process protocols adopted by the Jan. 11, 2006 (R. 01-08-028) and Jan. 2, 2007 (R. 06-04-010) ALJ rulings. The ED vetting process consisted of posting draft DEER values for stakeholders to review and provide written comments. Webinars and follow-on meetings offered opportunities for stakeholders and DEER Team to ask clarifying questions of each other and to further discuss in greater detail stakeholder comments. The DEER Team posted responses to these written comments. The details of the comments and responses are in Appendix Q (attached to the final verification report). ED did consider each comment provided by stakeholders. In cases that warranted, the DEER Team did make a revision per comments. However, in cases where a comment or supporting information was not appropriate, the comment did not result in a change in the DEER value.
23	SCE	IOUs Have Significant Issues With the Quality of DEER 2008 Updates	Many improvements envisioned in the DEER 2005 report were implemented in DEER 2008. Improvement included for example, more use of EM&V results and improved calibrations, with the addition of behavioral information into the calibration process. Although many of the initial updates contained in DEER 2008 are simulation or model based, ED does not envision that future updates will always be simulation based. The DEER 2008 update focused on non-res and commercial building measures that were the highest savings contributors to IOUs+ portfolios. As additional measure are updated and added to future versions of DEER, methods other than building simulations will be utilized.
		DEER Updates Not Necessarily Based Upon EM&V, As Requested in D.08-01-042	In D.05-01-055 Section 5.3.2, the Commission placed DEER under the management of Energy Division under Research and Analysis in Support of Policy Oversight. +In performing the Research and Analysis functions, Commission and CEC staff should have full flexibility to obtain input from various resources (P. 122).+ The DEER Update were based EM&V findings as described on Page 16 in D.08-01-042. However, the Decision did not restrict the resources that DEER might use. In cases where measure information from these latest evaluations were not available, not conclusive, or questionable, DEER also incorporated the latest information available from other resources to either support or reject EM&V findings.

+	Party	Comment Summary	Response
24	SCE	Lack of Technical Transparency in Draft Report	ED created the VRT to be transparent, so a reviewer would be able to look at the +verification table+ in the VRT and see which values were updated. The VRT also has QC queries built in, so the user and easily compare results. With respect to the +additional documentation available upon request,+ ED will make sure that in the future, these files are provided all at once with the report deliverable.
25	SCE	Lack of sufficient documentation	This comment is related to the DEER documentation. The team assigned to complete the verification report was tasked with using the numbers from DEER, and thus, had no direct input on the DEER methodology and results.
26	SCE	SCE has asked for information that has still not been received	This comment is related to information requested of the DEER team and is outside the scope of the ED VR tasks.
27	SCE	ED implemented unproven assumptions in the draft report	SCE+s comments argue that 90/10 is the minimum split between residential and non-residential for ULP. ED+s DVR, Section 6.5.6, makes the argument that this assumption cannot be validated, but that the evidence cited leans in favor of the 10% assumption actually being lower. ED plans on implementing a study as part of its 2010 report that will calculate a better estimate of the ULP res/non-res split, but until then, ED believes 95/5 is a more appropriate assumption, since 90/10 cannot be seen as a reliable estimate at this time.
28	SCE	The VRT is systematically and Technically Flawed	see below
29	SCE	The VRT Uses the Incorrect Version of the E3 Calculator	The VRT development team was directed by Energy Division to use the E3 files available from http://www.ethree.com/cpuc+cee+tools.html, under the heading +E3 Calculators in Compliance with Decision 07-09-043. Updated 9/22/08+. These are the calculators used by all contractors in preparing their VRTs. Since the draft report came out, ED discussed this issue with SCE and E3, and the version 4a calculator is now publicly available on the E3 site. However, this calculator was not made public in enough time to be included in ED's Final Verification Report. As a result, the Final Report uses version 4b.

+	Party	Comment Summary	Response
30	SCE	The VRT Does Not Properly Report the Costs Associated With SCE's 2006- 2007 Claim	For the Draft Report, the SCE2501 VRT ED updated total expenditures were +67,723,294 – compared to +67,724,174 – a difference of less than .002%. The final release of the VRT for SCE2501 will reflect these new values. For SCE2517, the +114 variance is believed to be a rounding error (<< .01%).
31	SCE	IOU Tracking Systems Were Incorrectly Imported To VRT	The draft VRT for SCE2501 had excluded measure counts due to the lack of a "check+date" which was assumed to indicate that the measure had been paid. All versions since then have included all records from the tracking database using a logic that uses a different date field that is fully populated – for approximately 30 records with no date information, the "install+date" field was used as a proxy date field. For the SCE2501 program, the issue of reallocating non-screw in CFL units has been fixed – a new algorithm was applied to only those upstream lighting measures that had a 90/10 allocation within the tracking system. All record counts between the latest version of the VRT and the SCE2501 program tracking should match. For SCE2517, the SCE program tracking data in the VRT were double checked and did reveal the discrepancies that SCE cites for SCE2517. SCE would need to further document how they found this discrepancy in order for us to understand it.
32	SCE	The VRT Incorrectly Applies the Recommended Verification Rates From The Contractor Verification Reports Into the Databases	For the residential programs, installation rates exists on a site by site basis and therefore some sites may have had 33% of the expected measure quantity installed while others had 80% or 100%. All measures that are part of the verification measure grouping that were not sampled received a consistent installation rate. The installation rates differed between the contractor report and the VRT due to the reexamination of the installation rate algorithms used for the original verification report and finding that revised algorithms were more appropriate and accurate measurements for some programs. For SCE2517, the SPC program tracking data did not provide unit quantity, so a count of 1 was implied for all of these custom projects. For sampled cases, unit quantity was modified according to project file documentation. The install rate was always determined by comparing the quantity found to be eligible, installed and operational to the quantity documented in the project files.

+	Party	Comment Summary	Response
33	SCE	The VRT Contains FALSE Errors Which Incorrectly Count SCE's Benefits	In the Draft Report, the VRT for SCE2517 contained 17 measures with +False errors+. This was due to an incorrect interpretation of what Measure End Use Shapes were allowed in the SCE E3 Calculator. The lookup table of these values has now been corrected. All "False" values have been eliminated in SCE2517.
34	SCE	The VRT Incorrectly Applies its Climate Zone Mapping to SCE	The code that converts Zip code to Climate Zone will be corrected for the next release.
35	SCE	ED Omitted Program Savings From 2004-05 and Incorrectly Calculated the Proposed Ex-Post Savings of Others	The IDEEA program savings were not included in the DVR; the evaluation report was overlooked. SCE provided the ex-post results for each program and ex-ante for 80Plus which did not receive an impact evaluation; These savings have been incorporated into the 04-05 impact spreadsheet.
36	SCE	ED Omitted Program Savings From 2004-05 and Incorrectly Calculated the Proposed Ex-Post Savings of Others SEE EMBEDDED FILE	SCE provided an expanded table 2.2 from the annual report to account for the summer initiative savings, which typically were not included in the evaluations, but the savings should be included in the final VRT. The approach used to discount savings for SPC will be reviewed; The summer initiative savings for SFEER will be included; The Small Business Lighting Campaign did not have an evaluation, so the ex-ante reported savings will also be included.
37	SCE	Programs Missing Impact Evaluations: Application of Realization Rates	SCE provided an expanded table 2.2 from the annual report to provide the savings for the missing impact evaluations: Multi-Family, CA ENERG+ STAR, Bakersfield, and Small Non-res HTR. The Single Family Rebate program results will need to be further explored before included the ex-post results in the Final ED Verification Report.
38	SCE	2004-2005 Impact Evaluations Did Not Properly Account For Commitments That Are To Be Included In the 2004-2005 Recorded Results	The wording in the Draft Report on table 9 suggests that commitments were included for all, but this is not necessarily the case. In the Final Verification Report, the language around table 9 will be re-worded, but there will likely be no change in the savings amounts. ED made the following changes to the final verification report for all IOU numbers except for SDG&E who did not respond to the ED data request on this issue: The IOU Annual Reports were used for the residential new construction programs. The IOU Annual Reports were use for the non-residential new construction programs, with the gross realization rates from the 2004-2005 evaluation report applied to the commitments.

+	Party	Comment Summary	Response
39	SCE	ED's Draft Report Is Outside the Guidelines Approved in the EM&V Protocols	The EM&V protocols give ED a significant amount of discretion. See page 1 one the Introductory section of the protocols, which states: The +Protocols are the primary evaluation guidance documents for all types of evaluations presented in these Protocols, however this is not to be construed as limiting the ability of the CPUC or the Joint Staff to evaluate items in addition to or beyond those identified in these Protocols or to use evaluation processes and procedures beyond those presented in these Protocols. While these Protocols are the key guiding documents for the program evaluation efforts, the CPUC and the Joint Staff reserve the right to utilize additional methodologies or approach if they better meet the CPUC's evaluation objectives and when it serves to provide reliable evaluation results using the most cost-efficient approaches available+
40	SCE	The Verification Approach Utilized is Flawed	Decision 08-01-042 requires the use of updated DEER parameters in addition to installation rates. The referenced guidance document was given to evaluation contractors to guide their work prior to the issuance of D.08-01-042. Energy Division believes the methodological examples provided by SCE were an appropriate part of verifying measure installations.
41	SCE	The Installation Rates Determined By the Draft Report Are Incorrect	The Energy Division management responsibilities do not end with the issuance of the guidance document cited by SCE. Energy Division has the discretion to make changes to the EM&V work as needed. Point of Clarification to SCE's statement on pages 77-78: The Residential contractor did use a nested phone/onsite approach to verify that respondents' phone self-reports on the total number of CFLs installed/stored matched what was found onsite. And although the 67% installation rate technically was not verified onsite using a nested sample approach, the self-reports about total CFLs installed/stored were verified via onsite inspections. This should be considered as evidence confirming the validity of the 67% installation rate derived only from self-reports. The Major Commercial contractor scope included verification that a sampled measure was +eligible, installed and operational+. The operational aspect of the scope was a confirmation that installed measures were still producing energy savings at some level. Partial credit for measures that were operational but underperforming was not allowed. Measures that were installed but no longer producing savings (e.g., broken) lowered the verification rate.

+	Party	Comment Summary	Response
42	SCE	Incorrect Verification Reports for Upstream Programs	SCE makes three points: (1) the ED did not give SCE proper credit for 04-05 bulbs, (2) in 06-08, SCE is getting hit twice for bulbs that break/burn out early, and (3) SCE wants credit for 06-08 bulbs that haven+t been installed yet. • For (1), the 04-05 evaluation gave the IOUs credit for 04-05 bulbs not yet installed. Essentially, the EULs were doubled (from 8 to 16 years) for the percentage of CFLs in storage, assuming that when one CFLs burn out, one of the bulbs in storage will be installed and thus the program impact will continue for another 8 years. The savings estimates in the 2004-2005 lifecycle impact tables reflected this adjustment. • For (2), it is not known if the bulbs broke/burned out early due to reasons that are not captured in the EUL survival analyses. The next wave of the CFL User Survey attempted to address this issue but the results have not yet been analyzed. • For (3), Commission policy indicates that bulbs need to be installed in 06-08 to get credit. The CFL User Survey analysis should provide the type of "dynamic" result SCE is referring to, but the results will not be final until Summer 2009 at the earliest.
43	SCE	Flawed Sample Design	The comments will be considered in the next round of verifications.
44	SCE	Insufficient Sample Size	For ARP, the Residential contractor proposed a sample of 70 (in order to meet 90/10 using absolute precision) for each of the three program measures (recycled refrigerators, recycled freezers and recycled room air conditioners) for each utility. The sample sizes were decreased for both recycled freezers and recycled room air conditioners due to their limited participation in the program (13.8% and 0.02% of SCE's total ARP energy savings, respectively, through Q4 2007). The survey quota for recycled room air conditioners was eliminated completely while the quota for recycled freezers was lowered to 30 for each utility. This value provided 90/10 at the recycled freezers across the three IOUs. In any case, the 90/10 requirement would have applied to appliances overall not to a specific appliance.

+	Party	Comment Summary	Response
45	SCE	Lack Of Sample Precision: SCE2501 Residential Incentive Program	While the verification percentages include both failures (through early removals) and situations where the measure was never installed, the decision to incorporate all incented measures in the denominator for the verification rate was a choice made by the ED. This decision was made in concern over whether or not the EUL values consistently included early removals in the analysis. This issue will be re-examined as part of the evaluation studies, and if the findings show that the EULs properly accounts for early removals/failures, then those measures that are installed but removed will be added back into the numerator. The sample was a random sample of participant sites designed to provide 90% confidence and 10% precision for the verification results. The sample was based on the number of participant sites or multifamily complexes. Once a complex agreed to be in the verification survey, the on-site team attempted to census survey the common area measures. For measures installed in the individual apartment units, the sub-sampling method required surveyors to attempt to enter 10 apartments for all larger apartment complexes. The ability to achieve this target was a function of the site level management and the tenants. While the verification percentages include both failures of the lighting bulb or fixture and situations where the measure was never installed, the decision to incorporate both failure and not verified in the verification rate was a choice made by the ED. It is possible to try to differentiate these two types of missing lighting measures. For measures installed in multi-family units, however, it is often impossible to distinguish between failures, removal, and not installed. The movement of the tenant population often makes it impossible to question the appropriate person concerning the current and past disposition of the measures. SCE also raises an issue regarding the efficiency of cluster versus random sampling. In order to accurately estimate the standard error of an estimate (e.g., failure rate) obtained through cluster sampling, one has to take into account the intra-cluster correlation. Cluster sampling uses a two stage approach. Primary units (complexes) are selected randomly first. Secondary units (measures) are selected randomly from within each primary unit. The relative inefficiency of cluster sampling, over straight random sampling, is proportional to the size of the intra-cluster correlations. Theoretically, if the correlation is negative, cluster sampling can produce smaller standard errors. Realistically, however, one would expect the correlation to be positive within a complex for failure rates. Thus, the cluster sampling in this case is expected to produce higher standard errors.

+	Party	Comment Summary	Response
46	SCE	Lack Of Sample Precision: SCE2502 Multifamily Energy Efficiency Rebates	The sample was a random sample of participant sites designed to provide 90% confidence and 10% precision for the verification results. The sample was based on the number of participant sites or multifamily complexes. Once a complex agreed to be in the verification survey, the on-site team attempted to census survey the common area measures. For measures installed in the individual apartment units, the sub-sampling method required surveyors to attempt to enter 10 apartments for all larger apartment complexes. The ability to achieve this target was a function of the site level management and the tenants. While the verification percentages include both failures of the lighting bulb or fixture and situations where the measure was never installed, the decision to incorporate both failure and not verified in the verification rate was a choice made by the CPUC. It is possible to try to differentiate these two types of missing lighting measures. For measures installed in multi-family units, however, it is often impossible to distinguish between failures, removal, and not installed. The movement of the tenant population often makes it impossible to question the appropriate person concerning the current and past disposition of the measures. SCE also raises an issue regarding the efficiency of cluster versus random sampling. In order to accurately estimate the standard error of an estimate (e.g., failure rate) obtained through cluster sampling, one has to take into account the intra-cluster correlation. Cluster sampling uses a two stage approach. Primary units (complexes) are selected randomly first. Secondary units (measures) are selected randomly from within each primary unit. The relative inefficiency of cluster sampling, over straight random sampling, is proportional to the size of the intra-cluster correlations. Theoretically, if the correlation is negative, cluster sampling can produce smaller standard errors. Realistically, however, one would expect the correlation to be positive within a complex for failure rates. Thus, the cluster sampling in this case is expected to produce higher standard errors. We believe that SCE raises a good point and we will take this inefficiency in SE calculations in the next round of verification.

+	Party	Comment Summary	Response
47	SCE	Lack Of Sample Precision: SCE2502 Comprehensive Manufactured/Mobile Home Program	The first issue raised in the comments is a question regarding the telephone survey sample sizes: 90 for Duct Test and Seal and 150 for Refrigerant Charge and Airflow (RCA). The ED identified these measures together as the high impact HVAC Measure Group and the total is regarded as the critical number rather than the specific count of each measure. For the HVAC Measure Group then, the target was set at 200 telephone surveys in the evaluation plan. This number was thought to provide an adequate base from which to recruit the required 75 site visit participants. The Residential contractor was not able to complete the site visits from this group as planned. The site visit number was intended to provide 90% confidence with 10% precision for the HVAC measure group (and other measures installed by the comprehensive program). Regarding the specific reasons for the 90 Duct and 150 AC telephone surveys, a nominal target of 100 surveys for each measure was used to guide the telephone interviewers. For the Duct measure, 105 surveys were completed but only 90 could confirm that they had received the measure. The other 15 either did not know (8) or could not recall (7). The total surveys for RCA were well above the target of 100 since many of the participants in this comprehensive program received both measures. In the course of doing the Duct survey, a number of participants were also surveyed on the RCA measure. The actual total surveyed was 171 but 21 reported that they either did not know (16) or could not recall whether they had received the measure. With respect to how a 100% verification rate was determined, the Residential contractor does not assume a 100% verification rate, but assumes verification rates of 98.9% for Duct Test and Seal and 99.3% for RCA. The rate was calculated as the product of the telephone verification rate and the onsite verification rate.
48	SCE	Lack Of Sample Precision: SCE2511 Nonresidential Direct Install Program	The comments will be considered in the next round of verifications.

+	Party	Comment Summary	Response
49	SCE	Lack Of Sample Precision: SCE2517 Major Commercial Program	(Paragraph 1) An earlier version of the Major Commercial verification report was submitted in the appendix of ED+s Draft Verification Report. In the most recent version, the adjustment for clerical errors was removed. Therefore, SCE+s comment about a +tracking system correction+ is no longer relevant. (Paragraph 1, 2nd sentence.) There are three components to SCE2517: the Audit, SPC and Express Efficiency. The Audit component was not sampled nor subjected to any verification and its ex ante values were simply passed through. The sample frame for verification consisted of measures within the SPC and Express Efficiency components. A sample, stratified by savings, was randomly drawn from this frame. (2nd Paragraph) There was no cluster sampling. The population of measures was stratified by savings. Within each stratum a random sample was selected. On-site verification of sampled measures was then conducted. During on-site verification, if other program measures that were not sampled were observed, they were ignored. (3rd Paragraph, Sentence +1,2) Precision targets were never set for the Verification Study. There was no sampling within large facilities. (3rd Paragraph, Sentence +3) Lamp burnout is an issue currently under review by ED.
50	SCE	Lack Of Transparency In Verification Reports	SCE+s comments reference the Codes and Standards and New Construction report, and New Construction programs and measures. Since the scope of ED+s VR was focused on the programs with the biggest savings and measures with the biggest savings in those programs, the New Construction programs that SCE mentions would not be considered a big saver compared to SCE+s direct install program. With respectto an overall lack of transparency, the VRT was designed with transparency in mind, which is why the +Verification Table+ includes all original values as well as any changes made by ED.

+	Party	Comment Summary	Response
51	SCE	Incorrect Mapping of DEER UES Assumptions	The latest version of the VRT resolves this issue for the Residential measures. Since SCE's upstream CFL program accomplishments already incorporates an in-service rate of 90 percent, the VRT now applies an adjustment factor of 74.44 percent (67 percent / 90 percent) to the upstream CFL program accomplishments to simulate an installation rate of 67 percent for those upstream measures not updated by the interim DEER revisions. For Major Commercial measures, the contractor did not make any changes to the UES values assigned in the Interim Database. The table of variances in Example 5 on page 89 is in all cases explained by the install rate. The one exception is +Industrial Indoor Lighting System Replacement." SCE would need to provide additional explanation to determine how SCE derived this large variance. SCE+s realization rate (0.89) was not applied, thus there is no double counting when we apply the .79 realization rate deemed appropriate by the ED for all SPC-like programs. With respect to the Interim Database, the following corrections/clarifications are made: (Example 1 page 87) All Medical Offices will be reassigned to Health/Medical - Nursing Home instead of Small Office; (Example 3 page 88) New DEER mapping shows consistent value of 243.946. New DEER Mapping shows consistent value of 755.912. (Example 4 page 88) Refrigerator/Freezer recycling UES data revised.
52	SCE	Incorrect Mapping of DEER NTG	All NTG errors within the SCE2501 program as reported by SCE were resolved and are now correctly applied in the latest version of the VRT database. For SCE2517, the Major Commercial contractor believes 77% NTGR for occupancy sensors is correct. For SCE 2511 the direct install refrigeration NTGR was updated to 85%.
53	SCE	Incorrect Mapping of DEER EUL	All EUL errors within the SCE2501 program as reported by SCE were resolved and are now correctly applied in the latest version of the VRT database. The Major Commercial contractor discovered several building types were not correctly mapped, resulting in the E3 EUL being applied rather than the new DEER value. These errors will be corrected in the next VRT release. The Small Commercial contractor also corrected the EULs
54	SCE	Incorrect Incremental Cost Assumptions	Tracking-level costs for all four SCE2501 tracking databases were incorrectly assumed to be the incremental costs used as inputs to the SCE2501 E3 calculator. The application of E3 incremental costs at the appropriate measure level were applied to the latest versions of the SCE2501 VRT database.

+	Party	Comment Summary	Response
55	SDGE	DEER Updates Should be Publicly Vetted and Approved Before Actual Implementation	Energy Division+s decision to update ex-ante parameters with values found in DEER is pursuant to D. 08-01-042, OP 3(b). See pages 14 to 16 of that decision for the discussion, +For measures included in the Database for Energy Efficient Resources (DEER), however, we will update the values contained in the E3 calculators with the 2008 and 2009 DEER updates of ex ante measure savings parameters, including net-to-gross ratios and expected useful lives+. The DEER update was completed consistent with the process protocols adopted by the Jan. 11, 2006 (R. 01-08-028) and Jan. 2, 2007 (R. 06-04-010) ALJ rulings. Energy Division staff circulated requests for technical participation from parties, provided draft materials to parties, held several meetings to discuss technical issues, provided opportunities for written comments, and responded to written comments in writing. DEER used ex-post studies to calibrate models and develop net-to-gross ratios. In some cases, Energy Division and their contractors obtained information from studies that were still ongoing, which was anticipated be D. 05-01-055, Section 5.3.2 +In performing the Research and Analysis functions, Commission and CEC staff should have full flexibility to obtain input from various sources, including working groups of experts or hired consultants, as they deem appropriate to the circumstances+.
56	SDGE	Net-to-Gross Ration Estimation Procedures Do Not Provide Reliable Results	The current CPUC policy governing IOU earnings claims require that earnings be based on net energy and demand impacts. Sempra's comments are policy issues outside the scope of ED's verification report.
57	SDGE	An Updated Draft Verification Report Should be Released for Comment Prior to Finalizing. The Commission Should Then Formally Adopt the Report Through a Formal Proceeding.	Per Decision 08-12-059, ED+s final verification report will be issued by resolution with +detailed information regarding the underlying assumptions relied upon as well as supporting information and documentation that provides the basis for those assumptions.+
58		DVR should be Based on SDG&E and SoCalGas 2006 Annual Report and Not EEGA for 2004-2005 Energy Efficiency Programs.	ED made an effort to use SDG&E+s Annual Report for the 0405 programs but have not yet received the disaggregated annual report data from SDG&E for three of the programs.

+	Party	Comment Summary	Response
59	SDGE	T-8 Baseline Does Not Reflect Actual Customer Replacements.	DEER 34 watt lamp baselines were incorrectly applied to 40 watt lamp claims; this will be corrected in the final report by scaling up the DEER 34 watt baseline values to appropriately represent the 40 watt lamp baseline. However, SDG&E provides no confirmation of either the baseline or installed equipment ballast performance and assumes a worst case standard magnetic ballast baseline and best case ballast (low BF electric ballast) measure equipment for all claims.
60	SDGE	Update to Commercial Savings for Programs 3020 and 2013 Is Not Reasonable.	The SDG&E Small Business Super Saver (3020) and Express Efficiency (3012) savings claims are primarily based upon per-lamp removal and/or replacement wattage changes multiplied by hours of use and peak diversity factor assumptions. Although the savings claims are based on a generic base line lamp, the savings claims are not properly supported by pre-/post-retrofit ballast information nor are they based upon specific variations in retrofit lamp wattages (for replaced lamps). Additionally, site specific metered annual hours of use are not applied to each claim; instead program average +self-report+ (by whom SDG&E does not say) hours of use averages are applied using an undocumented method for developing peak demand use levels from annual hours of use. The DEER typical hours of use are based upon T8 lighting retrofit metering results updated using the annual values and hourly profiles taken directly from the 2004-2005 Express Efficiency data. ED believes these DEER values to be more typical of SDG&E participants than SDG&E+s claimed values.
61	SDGE	Upstream Lighting Res/Com Split – Consistent Application of Updates for the Utilities.	For ED's final verification report, a 95/5 res/non-res split was applied to SDGE 3016.
62	SDGE	SPC Realization Rate applied to Bid Program	Two values were allowed for the realization rate of customer C/I programs. A value of .79 was assigned to +SPC like+ programs. A value of 1 was assigned to the remaining programs. Although some differences in delivery are noted for non-SPC programs, they were still considered to be +SPC like+.
63	SDGE	Interactive Effects of Residential Lighting	For ED's final verification report, results will be presented in three scenarios: 1. Positive Interactive Effects only, 2. With both positive and negative interactive effects, and 3. Without interactive effects.
64	SDGE	Modeling Issues	ED can set up meetings with utilities to walk through the model for the 2008 verification report due in August 2009.

+	Party	Comment Summary	Response
65	PGE	THE 2008 “FINAL” DEER UPDATE THAT IS THE MAIN DRIVER OF THE RESULTS OF THE VERIFICATION REPORT GOES FAR BE+OND THE LIMITED UPDATE ENVISIONED B+ DECISION 08-01-042, CONTAINS MAN+ WRONG CONCLUSIONS UNSUPPORTED B+ COMPLETED MEASUREMENT STUDIES AND, AT A MINIMUM, NEEDS A FULL REVIEW BEFORE IT CAN BE USED FOR AN+THING.	Energy Division+s decision to update ex-ante parameters with values found in DEER is pursuant to D. 08-01-042, OP 3(b). See pages 14 to 16 of that decision for the discussion, +For measures included in the Database for Energy Efficient Resources (DEER), however, we will update the values contained in the E3 calculators with the 2008 and 2009 DEER updates of ex ante measure savings parameters, including net-to-gross ratios and expected useful lives. +
66		INTERACTIVE EFFECTS SHOULD NOT BE CONSIDERED AT LEAST UNTIL THE COMMISSION REVISITS THE ENERG+ SAVING GOALS	For ED’s final verification report, results will be presented in three scenarios: 1. Positive Interactive Effects only, 2. With both positive and negative interactive effects, and 3. Without interactive effects.
67	PGE	SPECIFIC COMMENTS 1 NTG	This comment is specific to how the DEER 2008 update applied a +self report bias adjustment+. For this report, ED simply used whatever NTG values were made available with the update. Energy Division may consider adding a self-report adjustment for the final PEB calculation.

+	Party	Comment Summary	Response
68	PGE	SPECIFIC COMMENTS 2	PGE's comment is about the CFL installation rate, basically saying that they should be crediting for bulbs that haven+t been installed yet and that the ED should use +ex ante in-service rates+ (which for PG&E are 76% but for SCE and SDG&E were 90%) until +data is presented addressing the too-soon-after-purchase data+. PGE believes the 67% installation rate includes results from the questions about recent purchases (CFLs purchased within the last three months). While these results are presented in the verification report, they were not used in the calculation of the 67% installation rate. The 67% installation rate reflects the percentage of bulbs that were purchased between Jan 2006-June 2008 that were installed by June 2008. Therefore it is an installation rate based on a minimum of 6 months and a maximum of 2.5 years. PG&E also references a 72% number as the +after 2 month+ installation rate, which is not found anywhere in the verification report. Finally, PG&E references the installation rates found in a process evaluation survey for PGE's CFL giveaway program. It is not appropriate to cite installation rates from a giveaway program (where only 1 or 2 CFLs were given out to presumably hard-to-reach segments of the population) as valid comparisons for the upstream program (where consumers purchases bought on average more than 10 CFLs and often these purchases were not their first, meaning they already had CFLs installed before 2006).
69	PGE	SPECIFIC COMMENTS 3	The issue of how the utilities should claim energy savings from CFLs installed after December 31, 2008 is a policy call that needs to be decided but is outside the scope of this report. We address this issue in the final performance basis report.

+	Party	Comment Summary	Response
70	PGE	SPECIFIC COMMENTS 4	• Sample size too small: The sample sizes for the on-sites were generally in line with the sample sizes used for all other PG&E single-family measures as well as similar measures included in SCG's verification analysis. In the next round of verifications, ED can consider this recommendation, but must factor in the overall small contribution these insulation measures make to the single-family component of PGE2000, let alone to the overall PGE2000 program or PG&E's total portfolio. • Verification method: The method used to verify PG&E's insulation measures is based on both phone and onsite verification data. The phone survey provided responses to some very basic questions about eligibility – "did you have pre-existing insulation installed?" and "was any of the insulation installed over unconditioned spaces (ceiling) or between conditioned spaces (wall)?" While it is true that self-reports for these types of things are not as good as onsite verification, the phone and onsite results were combined because the results from the on-sites generally confirmed the results from the phone. Finally, the verification method used for PG&E is essentially the same as used for SCG's insulation measures. • PG&E inspection results: PG&E mentions its "pass rate" for insulation measures but has never provided a database or a report as evidence for this result.
71	PGE	SPECIFIC COMMENTS 5	Energy Division was not able to research this mathematical error in time. ED will make sure this issue is reviewed and corrected for the final report.

+	Party	Comment Summary	Response
72	PGE	SPECIFIC COMMENTS 6	The simulation model used by DEER, specifically DOE-2.2, has a long history of use in EM&V as well as research across the US and internationally. The ability of DOE-2.2 to model residential and commercial building effects is well established in the literature by numerous studies. The comment seems to imply that studies done on DOE-2.1e, the predecessor of DOE-2.2, cannot be used to validate DOE-2.2 (+not been verified by either EM&V or field studies+). DOE-2.2 is in fact an improvement on DOE-2.1e, not a different program; the authors of DOE-2.2 are also the primary authors of DOE-2.2. In fact, several of the primary improvements to DOE-2.2 over DOE-2.1e are the duct leakage algorithms and attic modeling; these algorithms have be the subject of field verification such as that contained in the NREL (USDOE sponsored) April 2002 report +Thermal Performance of Unvented Attics in Hot-Dry Climates (NREL/TP-550-30839) Additionally, the IOU Standard Performance Contracting (non-res retrofit) and Savings By Design (non-res new construction) programs both rely on DOE-2.2 modeling for all building measure results and include all interactive effects for lighting measures. It should also be noted the DOE-2.2 and DOE-2.1e are the only simulation programs approved by the CEC for use in the non-residential and high-rise residential +performance+ method for Title 24 compliance analysis (the whole building analysis rather than prescriptive analysis method of complying with Title 24). Title 24 compliance analysis includes HVAC interactive effects as reported by DOE-2.2 or DOE-2.1e. It should also be noted that most Title 24 research was performed using DOE-2.2 including the non-residential duct sealing research work performed under the PG&E C&S program in support of the 2005 Title 24 non-residential duct sealing standard change.
73	PGE	SPECIFIC COMMENTS 7	The current structure of the earnings mechanism requires point estimates. Historically, point estimates have always driven the earnings calculations in California.
74	PGE	SPECIFIC COMMENTS 8	PG&E cites on page 15 of Appendix A1 to the draft report that the res/non-res split could be 86/14; however, no where in that report is it recommend that PG&E use this information to justify 90/10. PG&E implies that this survey was conducted to provide an answer to the res/nonres question. In fact, the in-store intercept surveys conducted as part of the PG&E process evaluation will provide the most convincing evidence of the res/nonres split. These intercepts are also being conducted in PG&E's service territory as part of the impact evaluation. The results from these intercepts will provide the most reliable source for estimating the actual res/nonres split.

+	Party	Comment Summary	Response
75	PGE	SPECIFIC COMMENTS 9	Energy Division does not agree that PG&E+s suggested changes are the best approach. The 2005 evaluation results are believed to be the most accurate.
76	PGE	SPECIFIC COMMENTS 10	EEGA values were only used in cases where the evaluated savings were not available. The only instance where EEGA values were used for 04-05 for PG&E was: 1505-04 Procurement Residential Energy Efficiency. On January 6, 2009 PG&E provided a detailed breakdown of the residential program claimed savings consistent with the annual report. PG&E identified 21,235 MWH, 33.96 MW, and 647 MM therms of ex-ante savings that did not appear to be accounted for in the evaluation. Realization rates from the single family rebates program were applied to these ex-ante savings to come up with the adjusted savings. PG&E was given credit for 11,042 MWh, 17.32 MW, and 239,390 therms in addition to savings reported in the evaluation report. By using the annual report instead of the EEGA values PG&E is credited an increase of +608 MWh, +1.28 MW; +87,096 therms over the savings they were credited in the Draft Verification Report.
77	PGE	SPECIFIC COMMENTS 11	Refrigerator/Freezer recycling measure UES values were corrected. Residential Ceiling insulation measure are not part of the DEER update.
78	PGE	SPECIFIC COMMENTS 12	The latest version of the VRT resolves this issue. Since PG&E's upstream CFL program accomplishments already incorporates an ISR of 76 percent, the VRT now applies an adjustment factor of 88 percent (67 percent / 76 percent) to the upstream CFL program accomplishments to simulate an installation rate of 67 percent for those upstream measures not updated by the interim DEER revisions
79	PGE	SPECIFIC COMMENTS 13	The wording in the Draft Report on table 9 suggests that commitments were included for all, but this is not necessarily the case. In the Final Verification Report, the language around table 9 will be re-worded, but there will likely be no change in the savings amounts.

+	Party	Comment Summary	Response
80	DRA	Describe whether the E3 calculators used are compliant with all CPUC direction regarding cost-effectiveness calculations, including D.07-09-043's treatment of freeriders.	The E3 calculators used in the VRT are from http://ethree.com/cpuc+cee+tool.html under the heading "E3 Calculators in Compliance with Decision 07-09-043. Updated 9/22/08." For a description of changes, see: http://www.ethree.com/downloads/E3%20Calculators/Version%204%20Changes.doc
81	DRA	What is the "sample frame" mentioned in section 5.1.1, page 20? How, if at all, does this impact the need to use tracking database data in the DVR, rather than E3 data?	The sample frame is defined as a list that includes every member of the population from which a random sample is to be taken. Sampled cases are investigated (e.g., measured and analyzed) and the results are then generalized to the population from which they were originally drawn. Once the decision to use the program tracking data as the inputs into the ES calculator was made, then the sample frame was defined as all records in the IOU program tracking databases. That is, the sample frame does not drive the need to use the tracking database. Rather, it is the decision to use the program tracking database as inputs into the ES calculator that drives the need to form a sample frame comprised of all records in IOU program tracking databases. It is from these frames that random samples were drawn.
82	DRA	A citation to the record should be provided for footnote 25+s discussion of the discount rate	The footnote has been deleted in the final Verification Report since the discount rate of 7.49% was retained.
83	DRA	Load shapes and their impact on MW savings should be discussed, since MW savings are driving the incentives claim for PG&E and SCE.	Load shapes were not adjusted for ED+s VR, nor will they be adjusted in time for the 1/15/09 deliverable. The rules for how load shapes were applied in the VRT are described in the VRT and user+s manual.
84	DRA	Detailed Comments and Questions by Section	DRA proposed adding more information to the report. In the interest of time ED was not able to address most of these questions and make the suggested changes but ED will take these under consideration for the next verification report.
85	DRA	The Executive Summary should provide a high level summary of the entire report, and should highlight keys issues which impact verified savings performance	Energy Division appreciates DRA's suggestions and will consider including these modifications in future verification reports; however, in the interest of time, these comments could not be addressed in this report.

+	Party	Comment Summary	Response
86	DRA	The statement that RRIM allows rewards which are "comparable to what the companies would otherwise earn through supply-side investments" mis-states the record. RRIM earnings "will approach supply-side earnings at a level of superior performance", per D.07-09-043, Finding of Fact 95, page 201	Energy Division modified the final report in response to this comment.
87	DRA	Section 3 should describe EM&V process for 2006-08, the ultimate product of 2006-08 EM&V efforts, the role of interim claims, and how this report is funded.	Energy Division appreciates DRA's suggestions and will consider including these modifications in future verification reports; however, in the interest of time, these comments could not be addressed in this report.
88	DRA	Section 4 should include discussion of D.08-01-042 OP2b, pg 25, and how the bar is lowered to 65% of goals in the final claim, if interim claims are awarded based on updated ex ante assumptions, and that interim payments are not refundable if ex post savings exceed 65% of goals.	Energy Division modified the final report in response to this comment.
89	DRA	Describe whether the E3 calculators used are compliant with all CPUC direction regarding cost-effectiveness calculations, including D.07-09-043's treatment of freeriders.	The E3 calculators used in the VRT are from http://ethree.com/cpuc+cee+tool.html under the heading "E3 Calculators in Compliance with Decision 07-09-043. Updated 9/22/08." For a description of changes, see: http://www.ethree.com/downloads/E3%20Calculators/Version%204%20Changes.doc
90	DRA	What is the "sample frame" mentioned in section 5.1.1, page 20? How, if at all, does this impact the need to use tracking database data in the DVR, rather than E3 data?	The sample frame is defined as a list that includes every member of the population from which a random sample is to be taken. Sampled cases are investigated (e.g., measured and analyzed) and the results are then generalized to the population from which they were originally drawn. Once the decision to use the program tracking data as the inputs into the ES calculator was made, then the sample frame was defined as all records in the IOU program tracking databases. That is, the sample frame does not drive the need to use the tracking database. Rather, it is the decision to use the program tracking database as inputs into the ES calculator that drives the need to form a sample frame comprised of all records in IOU program tracking databases. It is from these frames that random samples were drawn.
91	DRA	A citation to the record should be provided for footnote 25's discussion of the discount rate.	Footnote 25 was removed from the Final Verification Report.

+	Party	Comment Summary	Response
92	DRA	Load shapes and their impact on MW savings should be discussed, since MW savings are driving the incentives claim for PG&E and SCE.	Load shapes were not adjusted for ED+s VR, nor will they be adjusted in time for the 1/15/09 deliverable. The rules for how load shapes were applied in the VRT are described in the VRT and user+s manual.
93	DRA	A qualitative summary of types of changes in the 2008 DEER updates should be provided. Differences between this and the update used in the DVR should be provided	Energy Division appreciates DRA's suggestions and will consider including these modifications in future verification reports; however, in the interest of time, these comments could not be addressed in this report.
94	DRA	Installation rate adjustments should be described in more detail. What is the extent of surveys vs. field measurement? How will this change in the final impact evaluation? What are the types of adjustments (e.g – residential vs. non-residential) and the extent of each type. Why do the residential vs. non-residential rates and storage rates for CFLs matter?	Energy Division appreciates DRA's suggestions and will consider including these modifications in future verification reports; however, in the interest of time, these comments could not be addressed in this report.
95	DRA	What did the cost audit entail? How extensive was it? Is it correct to say that the CPUC has verified that the Utilities' reported costs are accurate, except for the issues identified as "not significant" on page 31?	Energy Division modified the final report in response to this comment.
96	DRA	The cumulative GWH in Table of 82% does not agree with the 77% value in Table 16B. What are these figures percentages of?	Energy Division modified the final report in response to this comment.
97	DRA	It would be helpful if Table 16A showed the impacts of each measure as a percentage of the DVR total savings. A separate table could show reported measure impacts as a percentage of total utility reported impacts	Energy Division appreciates DRA's suggestions and will consider including these modifications in future verification reports; however, in the interest of time, these comments could not be addressed in this report.
98	DRA	Why did ED develop the VRT? Will it be used in the final earnings claim?	ED created the VRT to be transparent, so a reviewer would be able to look at the +verification table+ in the VRT and see which values were updated. TheVRT also has QC queries built in, so the user and easily compare results. Unless directed otherwise, ED will use the VRT in the 2nd and Final earnings claims.

+	Party	Comment Summary	Response
99	DRA	DRA suggests that the descriptions of VRT fields and methodologies be moved to an Appendix, and that this section focuses on findings, like describing by type (EUL, UES, NTG, etc.) the impacts of the "update" on claimed savings.	Energy Division appreciates DRA's suggestions and will consider including these modifications in future verification reports; however, in the interest of time, these comments could not be addressed in this report.
100	DRA	Table 20 shows how the UES update for each program changes kWh, kW, and Therm savings claims. A similar table should be created for NTG, EUL, installation rate, and every other savings assumption change which had a significant impact on utility savings performance.	Energy Division appreciates DRA's suggestions and will consider including these modifications in future verification reports; however, in the interest of time, these comments could not be addressed in this report.
101	DRA	DRA's first read of Table 23 suggested that the utility claims in the PFM, without any updates, were being confirmed by the ED team. However, the energy savings and PEB based on Table 21 are not the same as those in the PFM. Differences in savings level have potential explanations, but DRA is not aware why PG&E's claimed PEB in the PFM (+988 million) is nearly 10% higher than that based on Table 21 (+901 million). Additional definition of "Option 0" and the data in Table 21 may help identify the source of this discrepancy	Option 0 simply takes the utility calculated values from the utility submitted E3 import/export sheets, and aggregates the savings and net benefits values for each program to the IOU portfolio level. The E3 model is not used to re-calculate values when Option 0 is selected.
102	DRA	HVAC interactive effect impacts should be presented if they are being considered for inclusion in the final impact evaluations. Regardless of the magnitude or direction of these interactive effects, DRA strongly believes that a consistent approach should be applied across all utilities, and that it must fairly address impacts to SoCalGas for SCE measures which increase heating loads	ED's Final Results are presented using three different data sets: With Positive Interactive Effects Only, With Both Positive and Negative Interactive Effects, and Without Interactive Effects.

+	Party	Comment Summary	Response
103	SCE	Residential Interactive Effects Not Valid	SCE, as does PG&E and SDG&E, refers to comment extensively on a Canadian study released after DEER was released and was not used by the DEER. DEER conducted its work independently. Interactive-effects were discussed in the DEER Unit Energy Savings webinar and follow-on meeting. The utilities seem to claim that when indoor lighting loads are decreased by up to 75% from a CFL or by removal of a refrigerator it will cause no change in gas heating use. The utilities have offered no studies or data to support this claim, and at the same time refuted studies and data that support increase heating due to decrease lighting and other internal loads. Please see comments and responses on interactive-effects in Appendix Q attached.
104	SCE	DEER Filled With Too Much Uncertainty	This comment is addressed in the reply to PG&E+s comment in Appendix Q. ED agrees that we need to understand the uncertainty in EM&V results and in DEER as well as in utilities+ workpaper values. This uncertainty will continue going forward but ED is actively pursuing more rigorous EM&V activities. ED views the utilities+ workpaper values as having similar or higher level of uncertainty, also in some cases using more optimistic values rather than typical values.
105	SCE	SCE Contests the General Modeling Assumptions in DEER	ED agrees that DEER values and updates must be undertaken to produce values that better represent typical expected savings, and has driven to ensure that is the result of the DEER updating process. ED disagrees with the commenter+s specific criticism that DEER values are not based on current data representing typical savings. For example: A) the existing field data on CFL replacement for incandescents do not support the IOU+s lumen mapping method, and actually demonstrates that method over predicts savings. B) DEER refrigerant charge methods are based on field measurements on real operating units. SCE+s lab data may not represent field results nor do they represent the wide range of equipment found in the field. C) The utilities'+ baseline assumptions on chiller and T12 are based on worst case scenario, where DEER takes into account the variation of existing equipment in the field. Other modeling issues in this comment are addressed in Appendix Q.

+	Party	Comment Summary	Response
106	SCE	DEER 2008 Bias Is Evident In Calculating Unfavorable Results	The DEER process is independent and objective. The commenter is not commenting on DEER, but the perceived bias in decisions ED made in the update process. This perceived bias arise in which the utilities take the most optimistic value rather than a typical or expected value in their assumptions, thus the resultant adjustment often tends to be a lowing of the value, moving it from an optimistic to a typically expected one.
107	SCE	Incorrect Evaluation of Appliance Recycling Program	The commenter has made numerous incorrect assumption about the modeling and incorrect assumptions for the models. The specifics of correcting the commenter+s interpretation were discussed in the DEER webinar and meeting, and are contain in Appendix Q attached.
108	SCE	New Energy Star Refrigerator Measures	The DEER team believes that the comment "during the planning of the '09-'11 programs, we noticed that the deemed annual energy savings practically tripled" is in fact an observation of above customer average savings, not above code savings. In the 2008 DEER database, customer average demand savings are three to four times greater than above code demand savings and are therefore three to four times higher than the demand savings reported in 2005. However, the DEER team could not find any instances in the 2008 database where customer average savings were more than about four times the code baseline demand savings. During the webinar for the energy results, the SCE stated that demand results had been taken from the utility's filings. SCE and the DEER team all observed and agreed that the utility's filings had an error that caused demand savings to be under reported by an order of magnitude. Please see responses to comment in Appendix Q attached.
109	SCE	The values used for the DEER modeling inputs are still somewhat unclear and are not clearly referenced on the DEER website or in the Draft Report.	On September 19, 2008, the DEER Unit Energy Savings Team conducted a webinar on the MAS Tool. In this webinar, the DEER Team demonstrated how to install and use the MAS tool. Using this software, one can see the various assumptions and information available for any simulated measures under this tool.

+	Party	Comment Summary	Response
110	SCE	SCE Has Asked For Information That Has Still Not Been Received	ED believes it has responded to utilities comments as submitted. Please see comments and responses again in Appendix Q attached. In the appendix of this report, ED is re-supply those information and in addition supplying addition information to satisfy the utility+s request.
111	PG&E	The 2008 “final” deer update that is the main driver of the results of the verification report goes far beyond the limited update envisioned by decision 08-01-042, contains many wrong conclusions unsupported by completed measurement studies and, at a minimum, needs a full review before it can be used for anything.	D.08-01-042 OP 3 directed ED to use measures contained in +the 2008 and 2009 DEER updates of ex ante measure savings parameters, including net-to-gross ratios and expected useful lives.+ DEER based its updates on latest evaluations results and other latest information available. The utilities managed the contracts for the 04-05 evaluation studies and were participants in the evaluation studies project advisory teams. The utilities actually had access to these evaluation study results in advance of the DEER team. In the advisory teams, the utilities provided comments on the draft evaluation plans prior to execution, and had opportunities to comment on the draft results. Then in the DEER update public review process, the DEER Team received comments from stakeholders and where errors were discovered, the Team corrected the errors. In cases where the comments warranted a modification of the measure ex ante estimates, the Team revised the estimate values accordingly. The DEER Team did not make a change when not warranted. ED was not limited to using only completed evaluation studies.

+	Party	Comment Summary	Response
112	PG&E	The 2008 DEER update inconsistently applied a self-report bias adjustment, occasionally taking it into account (e.g., the residential retrofit direct install program) and often ignoring it, resulting in a biased result (e.g., the Standard Performance Contract evaluation, which eliminated such an adjustment for its large customers who participate in its Standard Performance Contracts program without explaining why the self report bias was eliminated. The Evaluator who incorporated the bias correction stated that .05 was eliminated because it was for spill-over, yet did not explain why the remaining .1 correction for self-reporting bias was eliminated.) In other instances, e.g., the Savings by Design programs, the net-to-gross ratio selected by the Energy Division cannot be ascertained from the studies used for the 2008 update.	The DEER Team+s treatment of self-report bias is consistent, and this issue is addressed in the responses to comments during the DEER public review process. Please see Appendix Q attached.
113	SDG&E	DEER Updates Should be Publicly Vetted and Approved Before Actual Implementation	The ED DEER vetting process includes a public review and comments period. The ED vetting process is not, nor should it be, a public negotiation of the technical values. The direction given to ED is not to negotiate a value but to establish that a typical or average estimate was based on the most recently available information. See D.05-01-055 Section 5.3.2. This section also addresses utility conflict-of-interest concern in activities involving judgment.
114	SDG&E	Net-to-Gross studies use controversial methodologies to estimate results.	ED disagrees with the commenter. Evaluations have been used to develop NTGR values for more than a decade, and as with any estimations relating to accomplishments there is expected to be a variation around the point estimate value that is adopted as the average or typical value. The single point estimates are based on the most reliable methodology available at the time. The net-to-gross methodology documentation, Draft 2006-2007 Ex Ante Net-To-Gross Ratio Update, was posted as part of the public review and comments process. Please see Appendix Q attached.

8.5. Additional Documentation for Final Report (Appendix O)

VRT 4.5
VRTs for all programs
RRIM spreadsheets
04-05 Documentation
Interim DB documentation
Interim DB Positive
Interim DB Interactive
Interim DB Non-Interactive
Backup docs from PGE Industrial
Backup docs from Major Commercial
Backup docs from Small Commercial
Backup docs from Residential

9. List of Appendices

Appendices may be downloaded from:
http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Efficiency/EM+and+V/
or
http://eega2006.cpuc.ca.gov

Appendix A1: Residential Program Verification Report
Appendix A2: Small Commercial Program Verification Report
Appendix A3: Major Commercial Program Verification Report
Appendix A4: Industrial Program Verification Report
Appendix A5: Local Government Program Verification Report
Appendix B: List of 2004-2005 Evaluation Reports and Workbooks used to Calculate Savings
Appendix C: Calculation of Realization Rates for 2004-2005 Programs
Appendix D: 2004-2005 Savings Calculations
Appendix E: DEER EUL Workbook
Appendix F: VRT Users Manual
Appendix G: VRT and Associated Files
Appendix H: Statewide Utility Codes and Standards Program Interim Verification Report
Appendix I: *Reserved for 2006-2007 Financial Audit Reports*
Appendix J: Methods for Updating DEER Values
Appendix K: SCE CFL Workpaper
Appendix L: Workpaper for Measure Group Definitions
Appendix M: 1994 CFL Study
Appendix N: List of Materials Available upon Request
Appendix O: Additional Documentation for Final Report
Appendix P: Comments on the Draft Report
Appendix Q: DEER Comments and Responses